

MOTOR AGE

A CHILTON PUBLICATION

DECEMBER 1961

GOOD SHOPKEEPING WITH MODERN TOOLS AND EQUIPMENT

Form 3547 requested

Increased Dealer Potential	40
Scared of "Liftless" Cars?	50
Good Shopkeeping—A Blueprint to Success . . .	52
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Chestnut & 56th Sts.
Phila. 39, Pa.

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RINGS...

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For information on how you can participate in the Doctor of Motors Clinics, contact your Perfect Circle supplier soon.

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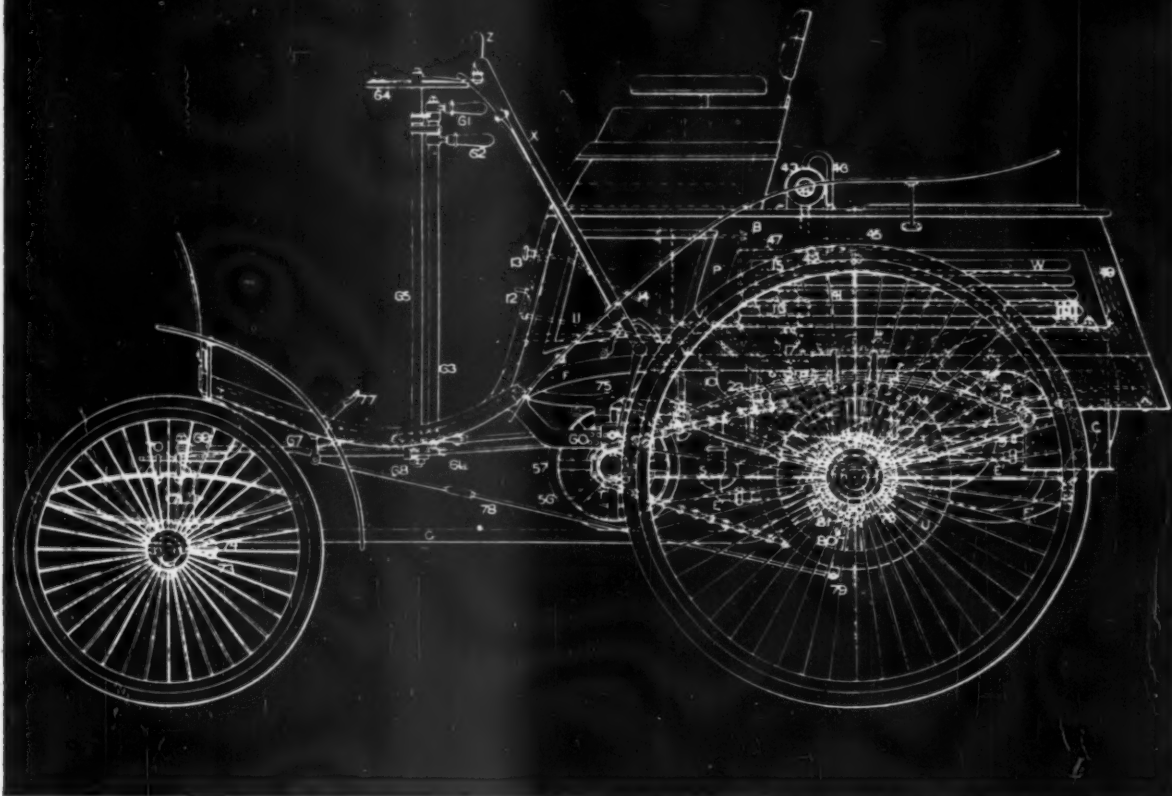
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a kit for almost every car

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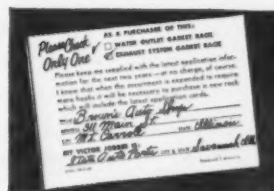
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gives instant, accurate sealing for popular cars

New type storage display rack holds complete assortment. Lets you pick needed gaskets in seconds. Backboard quickly identifies all stock—gives complete application data. **FREE!**—Victor makes your rack useful for years; gives you free replacement backboards, updated for each new assortment from year to year.

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MOTOR AGE

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BUSINESS STAFF
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This year, about 400,000 Imports will be sold in this country. Here are what some of them look like.

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Sherwood H. Egbert



International Set



Good Shopkeeping



Tools and Equipment

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CAR and TRUCK shop kinks

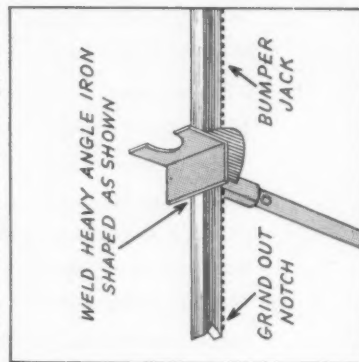
\$25 for KINK of the month \$10 paid for other KINKS

Kink of the Month

Reworked Bumper Jack Used To Push Buick Rear Back

Henry J. Stager, Jr., Donner Service Station, Clara City, Minn.

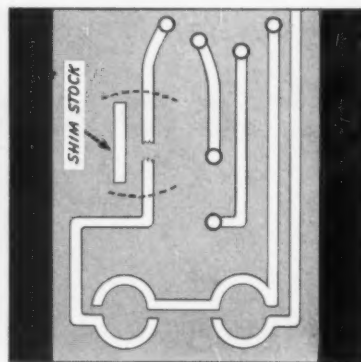
129. Here is a shop kink that I think is very helpful in saving time when transmission has to be removed on all makes of Buicks. The diagram shown at right will demonstrate how it works. I know that a lot of shops still do it the hard way. Maybe this shop kink will help them.



Repairing Printed Circuit Panel

Earl Smalling, 14400 Erwin St., Van Nuys, Calif.

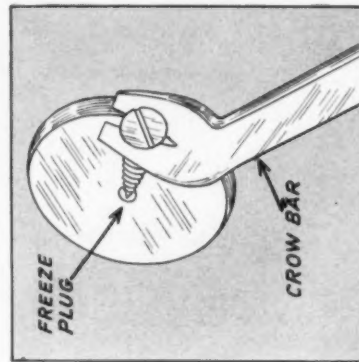
130. For a fast and neat repair of an open circuit in a printed circuit try this idea. Sand the metallic ribbon to clean off the insulation at the break. Tin the ribbon with a light amount of solder. From .002 shim stock (brass) cut a 1/16 inch strip to overlap the break. Sweat the strip to the ribbon. Reinsulate the repaired section.



Short Cut For Removing Hard-To-Get-Out Freeze Plugs

Don Hencsik, Holz Motors, Inc., 5901 S. 108 St., Hales Corners, Wisc.

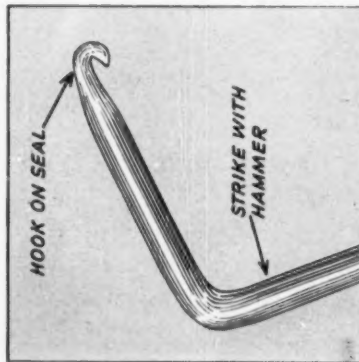
131. I have a shop kink that might be of interest to your readers. It is a good short cut for removing water jacket freeze or expansion plugs. All you have to do is drill a hole in the plug. Then screw in a large sheet metal screw and use a crow bar to pry it out.



Cotter Key Puller Handy For Removing Oil Seals

Robert Worley, Route #3, Florence, Ala.

132. We have found an easy and effective way to remove oil seals. A cotter key puller can be used to pull pinion seals and transmission grease seals. Just insert it behind the seal and drive it out with a hammer.



Sealed Power STAINLESS STEEL oil rings have m.a.*

REACH FOR
THE FAMILIAR
RED BOX



*mechanic appeal

WHY? THEY'RE A SNAP TO INSTALL
AND THEY CONTROL OIL RIGHT FROM THE START



Here it is—the sure-fire formula for top-notch ring jobs: install Sealed Power Stainless Steel oil rings. They absolutely control oil right from the word go, put an end to your “come-back worries.”

Sealed Power Stainless Steel oil rings eliminate the two main causes of oil consumption—clogged oil rings and loss of tension. Here's why:

Stainless Steel resists the effects of acids and gases. It doesn't pit or etch, so carbon can't

cling. Return oil vents stay clean.

Stainless Steel retains its tension at high operating temperatures for lasting fit, lasting side seal.

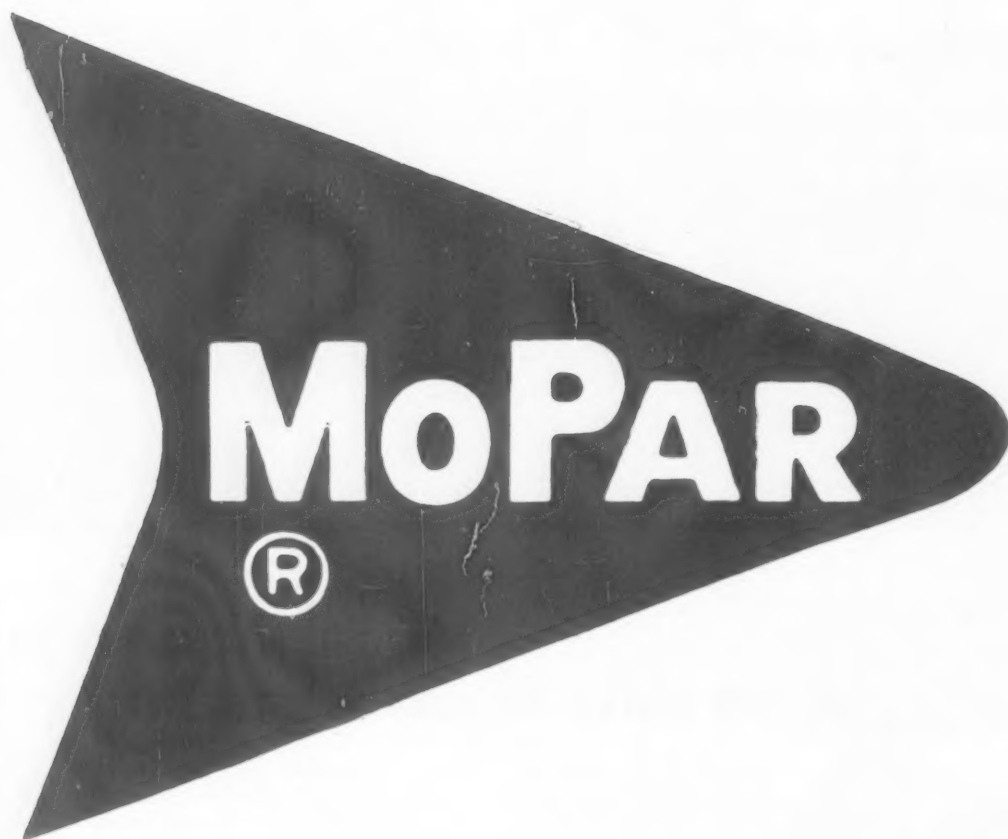
Patented, proven design of Sealed Power Stainless Steel oil rings ends groove-depth problems. Proper tension does not depend on contact with bottom of the piston groove. Installation is simple. No shims, no gauges, no springs, no worries. You have the best and you know it.

More than 100,000,000 Sealed Power-designed Stainless Steel oil rings have been factory installed in new cars. Proof? Sealed Power Corporation, Muskegon, Michigan.

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100,000,000 cylinders can't be wrong!

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New or remanufactured—these parts fit right, work right, install quickly—save labor time, help keep jobs rolling on schedule.

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new, modern M, 2-ton jack
lifts to 25 inches —

only **\$157⁰⁰**

suggested dealer price



dependable G.G. 4-ton
jack has rapid two
speed pumping action

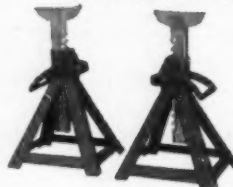
only **\$229⁵⁰**

suggested dealer price



Hein-Werner 2 and 4-ton Hydraulic Service Jacks offer the economical, trouble free lifting power you need to capitalize on your shop potential to the fullest. Handle everything from passenger cars right up to medium-heavy trucks. Long, sleek chassis are extra sturdy, better balanced and easier to maneuver. Dual pistons with automatic cut-off valve make lifting fast, effortless, and positive. Stop in hydraulic unit prevents damage due to ram overtravel. Large white saddle for quick spotting. Handle pumps full 90° stroke and has three locking positions. Roller bearings in front wheels; ball bearing casters. Positive-gear action release valves, *plus* Hein-Werner "Quality First" design and performance. See your H-W Jobber, or write us for full facts.

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Instantly adjust to desired working height; lock securely in place automatically. Offer stable, proper load support for *safer* under-vehicle work; relieve jacks for other lifting jobs. Every H-W SAFETY STAND factory tested to support 50% overload. Available in pairs from your H-W Jobber now at these economical suggested prices:

Model CS-211, 2-ton capacity, per pair: \$17.50

Model CS-5.15, 5-ton capacity, per pair: \$24.50

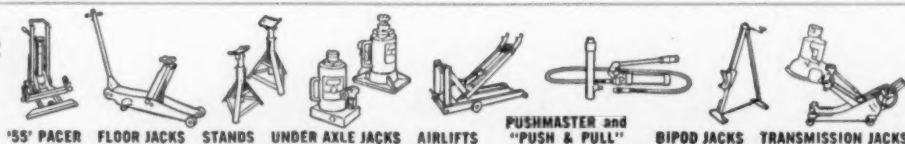
Model CS-7.20, 7-ton capacity, per pair: \$35.60



HEIN-WERNER HYDRAULIC HAND JACKS

Safety-engineered for powerful, dependable, easy lifting. Available in capacities of 1½, 3, 5, 8, 12, 20, 30, 50, and 100-tons — 12-ton models and larger have positioning handles; all jacks factory tested at 1½ times rated capacity to assure maximum safety and performance. Order now from your H-W Jobber.

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TRANSMISSION JACKS

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Lightweight, with
heavy-duty
construction.

TOUGH

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Electric Polisher
takes on any
surfacing job.

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High-Speed Polisher
for acrylic-type
paint jobs.

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... Heavy-Duty
Automatic Polisher
cleans, seals, shines,
waxes in one operation.

No wonder so many service station operators elect to use Black & Decker! Spin through any kind of polishing, waxing, rubbing, buffing job with any one of Black & Decker's Polishers . . . and watch your work go faster, finishes come out finer.

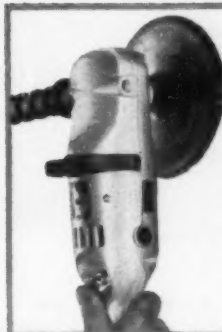
Whichever model you choose, you can count on its powerful B&D-built motor . . . its tough construction . . . its combination of weight, balance and size to give you polishing perfection (with minimum of muscle on your part).

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MAKER OF THE WORLD'S FIRST
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(twin to the Servicemaster Polisher) gives you a low-cost, more compact, longer-lasting tool for profitable body shop work. Unique exhausts keep dust out of the work's way, precision balance gives you your way for perfect sanding control. This is just one of a line of Black & Decker Sanders you can profit by.

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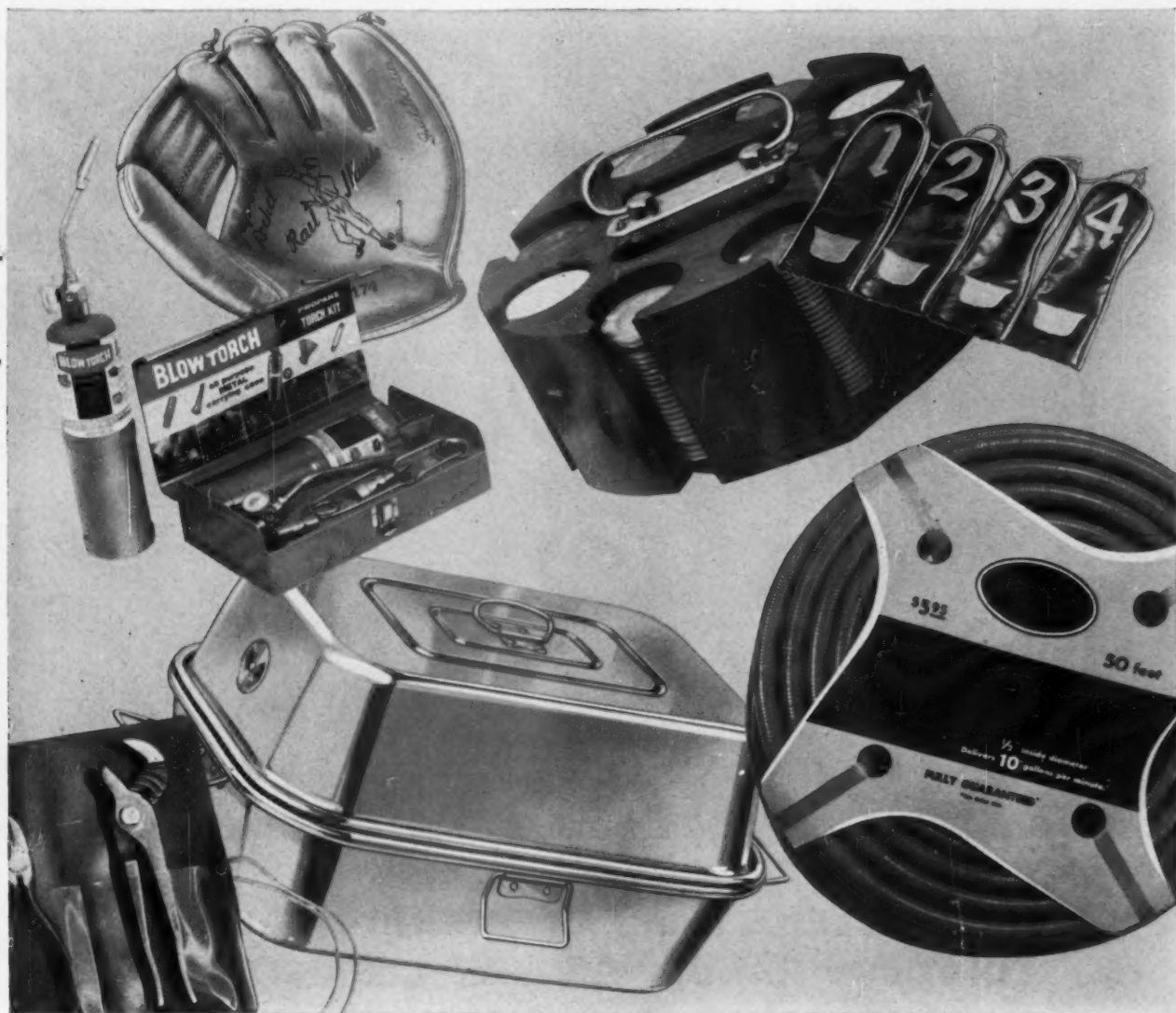
Get 1200 Parade of Prizes prize points when you buy any four of the Parade of Prizes cases of AC-Guide headlamps! These points entitle you to any one of the exciting prizes shown above, and many, many more! The four merchandising packages in the AC-Guide "Parade" include the types of headlamps shown at right.

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OF THE MONTH



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with 1200 big, valuable Parade of Prizes prize points!

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GL-104M (Case of 12 type 4002 Guide Lamps)

GL-105M (Case of 12 type 6006 Guide Lamps)

GL-106M (Case of 12 type 6012 Guide Lamps)

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AC Guide
HEADLAMPS



For every cleaning job . . .



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Deep-Clene is available in 1- and 5-lb. cans. An efficient dispenser—which fits the 5-lb. can—is also available. Ask your Bendix Distributor today about Deep-Clene . . . another quality chemical product manufactured by Bendix for the Automotive Industry.

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Bendix Automotive Service Division, South Bend 20, Ind.

Bendix Automotive Service



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for the newest in

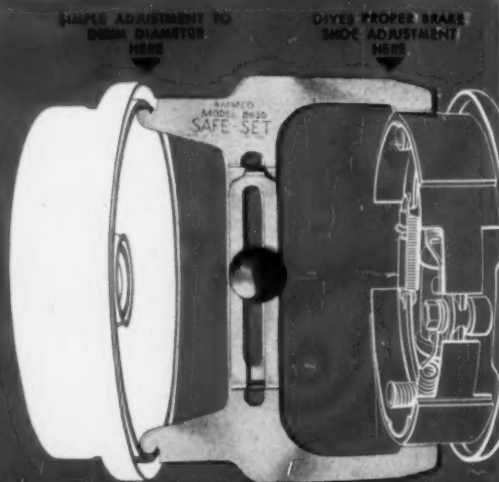
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The greatest brake innovation since the switch to hydraulics...at a price everyone can afford.

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- For use on ALL Bendix fixed anchor brakes



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INCLUDES:

- NEW Model 8000 "Safe-Arc" Brake Shoe Grinder
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profit-making brake service equipment

new... profitable... reasons why...

**\$ new
3**

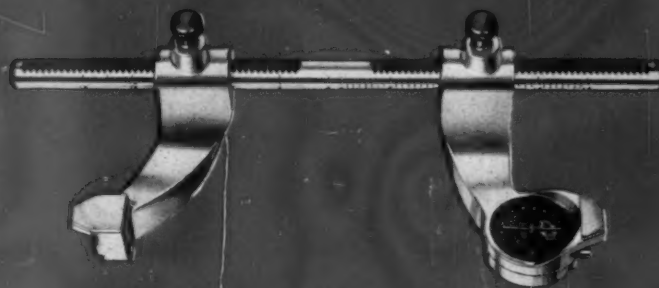


MODEL 8000 "SAFE-ARC" BRAKE SHOE GRINDER

...contains all the features of previous models while offering range, versatility and more built-in features.

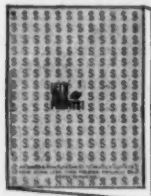
- FAST—RUGGED—EASY TO USE.
- 6"-16" range—handles ALL cars—American and European—even cast Mercedes shoes
- Built in Fixed Anchor grinding • Can groove and grind at same time

**\$ new
4**



AMMCO MODEL 0500 "SAFE-MIKE" DRUM MICROMETER

A quality instrument that SELLS drum turning or replacement. Another piece of AMMCO's profit-making brake equipment.



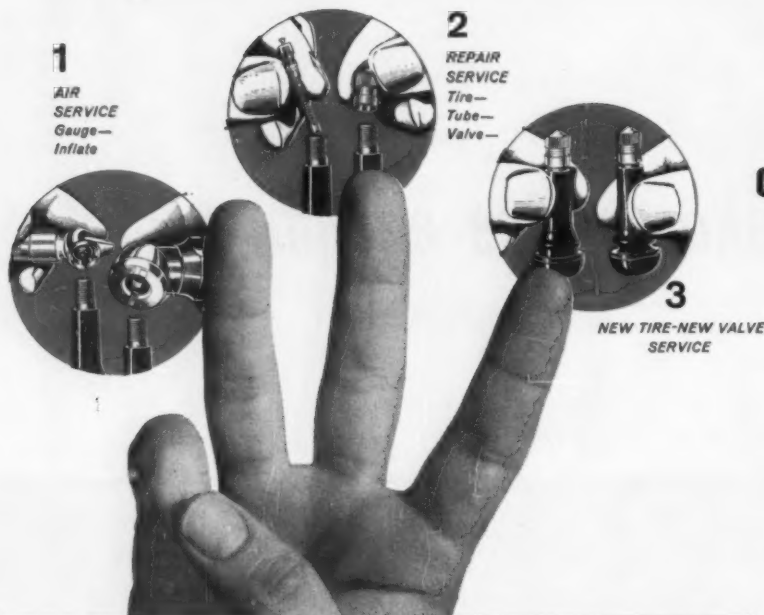
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TODAY**

for new descriptive booklet and get
complete story on these new items

AMMCO TOOLS, INC.
2175 Commonwealth Avenue North Chicago, Illinois

NO DOUBT ABOUT IT

AMMCO
IS THE BUY



Cut tire adjustment claims! Another extra with Schrader's **TIRE-LIFE EXTENSION*** plan

Extending the life of tires makes good business sense. By keeping your customers' tires properly inflated for best wear resistance you also reduce Road Hazard Warranty adjustment claims. In addition, this plan helps sell more tires and accessories. **TIRE-LIFE EXTENSION** shows your interest in the simple service practices that people deserve and appreciate (but seldom get from your competitors).

For example, Schrader pocket gauges, dual-foot truck gauges and chuck gauges provide you with the tools to measure your customers' tire pressure, accurately every time. And you *know* they're right if you certify the accuracy of all your gauges regularly with the Schrader Tru-test Special gauge.

This one **TIRE-LIFE EXTENSION** practice will open many opportunities for sales of tires, balancing, alignments—any or all of your services.

You can see what this one practice can do in increasing regular customers and boosting sales. Use all three **TIRE-LIFE EXTENSION** services as really productive sales tools. But make sure your products are as good as your service. All Schrader products have the extra elements of quality that make for steady business.



*What is the **TIRE-LIFE EXTENSION** plan? Simply applying the three handy practices shown above. By using this plan dealers benefit three ways: 1. Fewer Road Hazard Warranty adjustment claims. 2. Additional new business in tires and accessories. 3. More steady customers.

Schrader
a division of **SCOVILL**

A. SCHRADER'S SON • BROOKLYN, 38, N. Y.
Division of Scovill Manufacturing Company, Inc.

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FOR ORIGINAL EQUIPMENT AND REPLACE

Made in America to American standards of quality by American craftsmen

SAFEGUARD ENGINE OVER-HAULS

Your reputation is in the hands of your customers. You can help them protect it. Here's the secret...

After the break-in period, engines need a motor oil that will keep parts clean and free-moving—and at the same time give peak lubrication protection *full time*. It insures smooth performance from the good work you do. Brings customers back for more service business. Builds bigger profits for you!

The oil that fills the bill is Pennzoil—the world's richest, most complete motor oil. So rich, it gives double the protection demanded! So complete, users never need extra additives! Because the special power ingredient, Z-7, keeps parts *clean*—stays on the job for the full life of each oil change.

Pennzoil Z-7 makes customers happy . . . builds more business . . . boosts your profit! So protect *all* your engine jobs with Pennzoil. Call your Pennzoil distributor, listed in the Yellow Pages, or write Pennzoil, Oil City 31, Pa.



2 Great Motor Oils!

This great pair of 100% pure Pennsylvania Motor Oils with Z-7 stays tough full time—keeps moving parts clean and free of excessive wear. Use them—recommend them, for top customer satisfaction.

Famous Pennzoil with Z-7
in all correct service grades.
Pennzoil 10W-30 with Z-7,
world's only oil-rich,
multiple-viscosity oil.

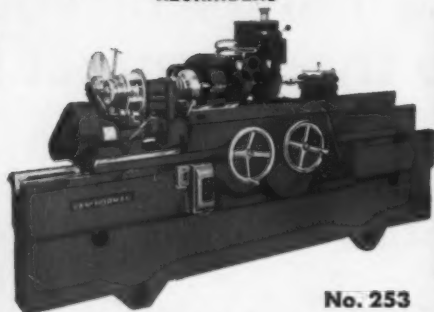


Member Penn. Grade Crude Oil Assn.,
Permit No. 2, Oil City, Pa.

The Complete Line

of Van Norman Automotive Machine Shop Service Equipment

REGRINDERS



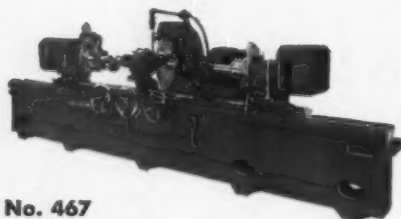
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Camshaft Regrinder speedily and precisely reconditions worn camshafts. Also regrinds main crankshaft bearings. 52" between centers; 9" maximum diameter. 84" model also available.



No. 561

Automatic Wet Surface Regrinder for fastest above-the-wheel wet grinding of all heads, blocks and manifolds—with quickest set-up time. Capacity 38" long by 14" wide. 60" by 16" model also available.



No. 467

Heavy-Duty Crankshaft Regrinder. For shafts up to 90" length x 10" stroke x 22" swing. Fast, accurate, vibrationless operation. Nine other models in this series.

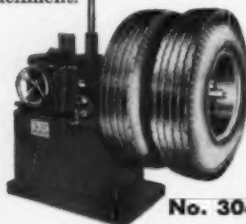
For complete information and performance data on this equipment write:

BRAKE DRUM LATHES



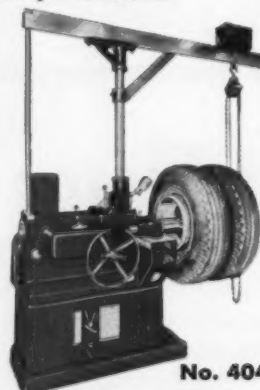
No. 302H

"Little Brute" Brake Drum Lathe for passenger car and truck drums with tires mounted up to 500 pounds. Turns and grinds at same time with optional Vapo-Jet Wet Grinding Attachment.



No. 304H

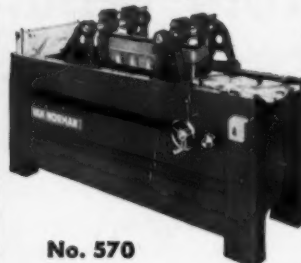
"Super-Duty" Brake Drum Lathe for car and heavy duty truck drums. Features simultaneous turning and grinding, built-in "scope light", quick action feed and speed selectors.



No. 404

"Speedy Brute" Brake Drum Lathe turns and grinds simultaneously. Flick-O-Matic feed control. Multiple spindle speeds. Exclusive Load Compensator supports all drum and tire assemblies.

ROTARY BROACH



No. 570

Rotary Broach with new cutter action quickly machines cylinder heads, engine blocks, and other surfaces. Top loading keeps chips out of work. Only machine of its kind!



No. 77754 Perfect-O Boring Bar for ONE CUT, hard sleeve and standard cylinder rebor-ing. Portable. With four speeds. Special vacuum system keeps dust and chips from crankcase and oil holes. Three other models available.

CYLINDER REBORING MACHINE

**THE PRECISION
VAN NORMAN MACHINING LINE** for
• Cars • Trucks • Buses •
• Tractors • Diesels • Com-
pressors • Industrial and Ma-
rine Engines. With Advanced
Design Features in:

Brake Drum Lathes
Camshaft Regrinders
Crankshaft Regrinders
Cylinder Rebor-ing Machines
Rotary Broach
Horizontal Automatic Wet Surface
Regrinders for Heads,
Blocks and Manifolds.

QUALITY IS THE REASON—IT PAYS TO VAN NORMANIZE



VAN NORMAN
Springfield 7, Massachusetts, U.S.A.
A DIVISION OF VAN NORMAN INDUSTRIES, INC.




when you know where to look!

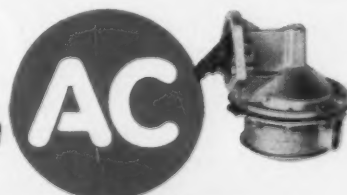
Fuel pumps, even the best of them (and that means AC), are good prospects for replacement by the time they've traveled 30,000 miles. When they aren't replaced, the motorist risks poor engine performance . . . and you lose legitimate profits.

Survey shows that 80 percent of the vehicles on the road have traveled 30,000 miles or more and are prospects for a new fuel pump right now. Four out of five of all vehicles are equipped with AC fuel pumps as original equipment. These figures mean business for you. Make sure your stock of AC Fuel Pumps is

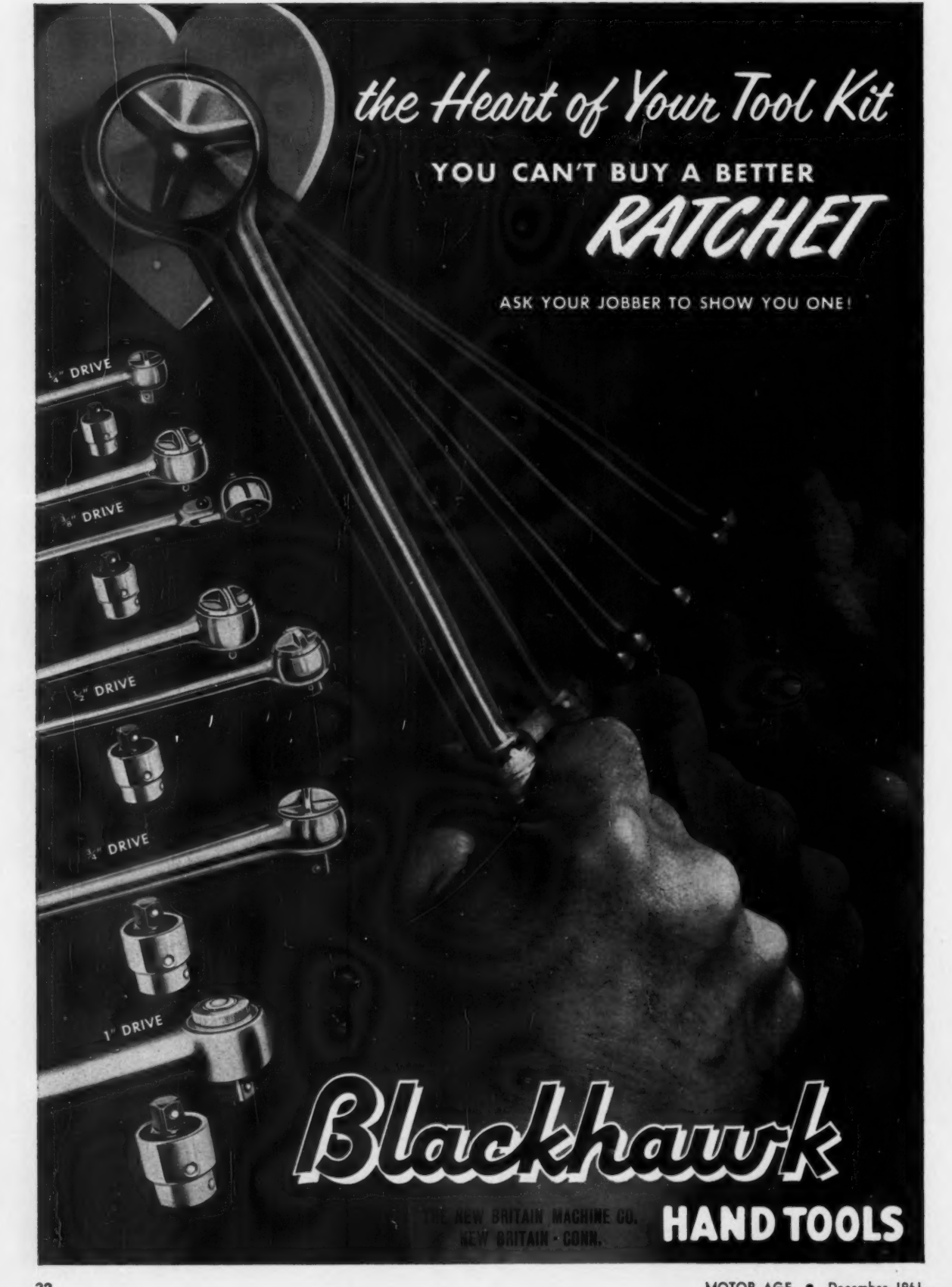
adequate, and start looking for new customers now! It's easy. Any car over two years old is a hot prospect. Point out to motorists that a fuel pump with 30,000 miles behind it has pulsated 45 million times. They'll understand why it's time to protect their future driving with a new AC Fuel Pump.

Don't let this profitable business get away. Look for the sale, then sell AC! Your customers will thank you . . . and you'll ring up healthy new profits. You get Action—volume sales Action—with AC Fuel Pumps. AC SPARK PLUG  THE ELECTRONICS DIVISION OF GENERAL MOTORS

sales
you get Action with



FUEL PUMPS



the Heart of Your Tool Kit

YOU CAN'T BUY A BETTER

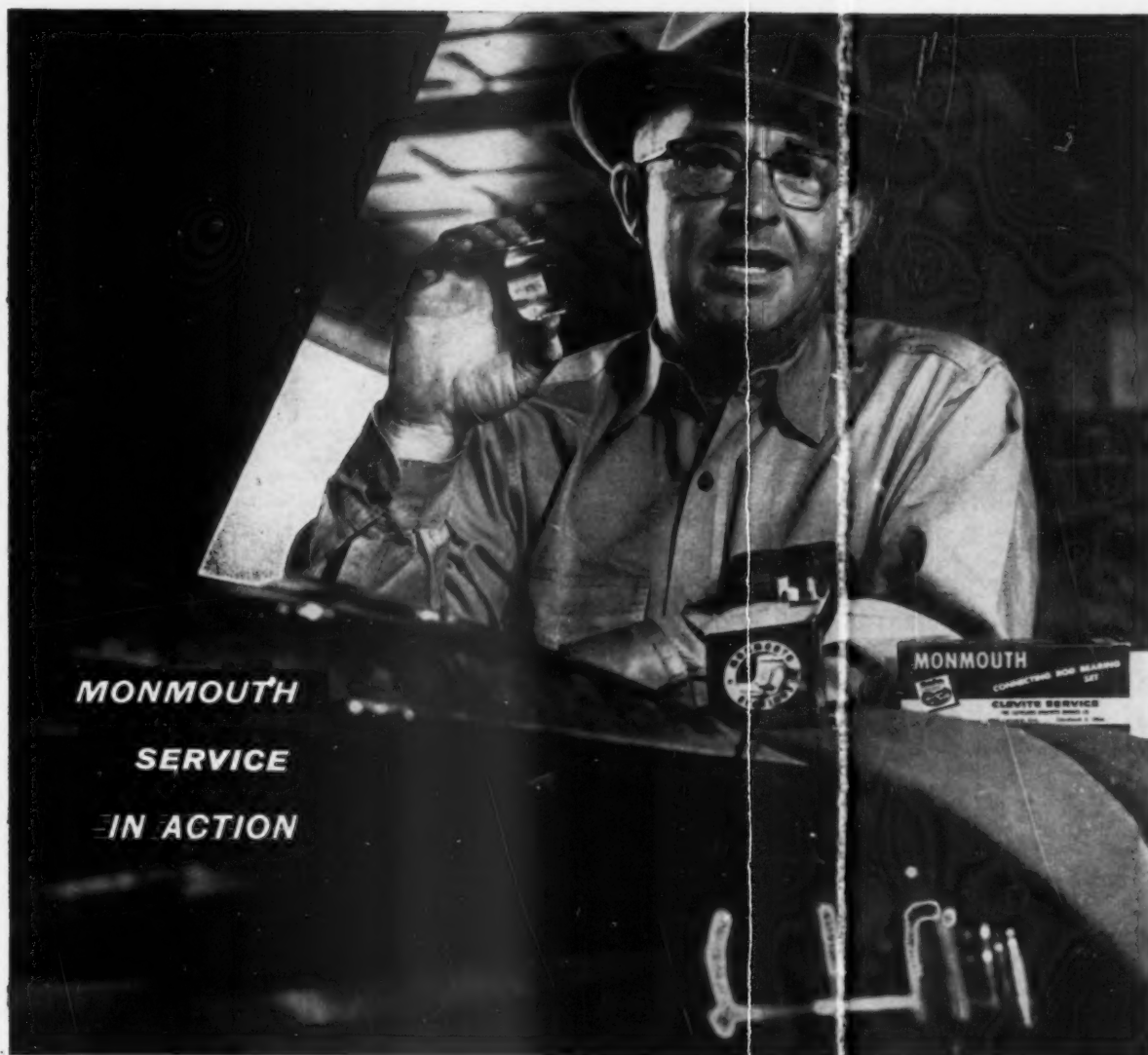
RATCHET

ASK YOUR JOBBER TO SHOW YOU ONE!

Blackhawk

THE NEW BRITAIN MACHINE CO.
NEW BRITAIN - CONN.

HAND TOOLS

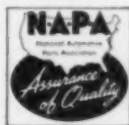


"Monmouth really concentrates on service . . .

... that's why I depend on Monmouth. I can get any bearing I want, as fast as I need it, just by calling my NAPA jobber. And I know Monmouth stands behind my jobber in making a product that's tops in quality. You can't beat that combination of quality and service. It makes my business a lot simpler and more profitable."

says Flake Wells, Jr., Owner
Wells Garage
El Paso, Texas

If you want performance that pays off, use Monmouth Bearings in all your engine rebuilds. For instant service, call on your NAPA jobber. He can give you complete Monmouth service on all your engine bearing requirements.



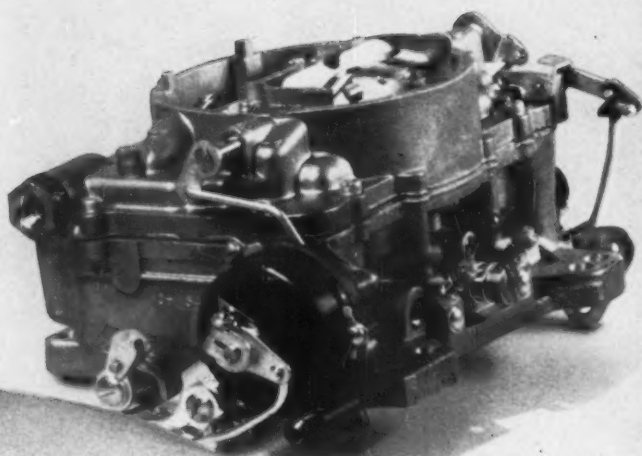
MONMOUTH Engine Bearings

CLEVITE SERVICE: Cleveland Graphite Bronze • Division of Clevite Corporation • Cleveland 3, Ohio



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EVERY CARTER ZIP-FIT CARBURETOR COMES WITH A RESILIENT LEAK-PROOF VALVE SEAT!



Starting today, you can install the most efficient anti-flooding carburetor ever developed! It's the NEW Carter Zip-Fit Carburetor, now equipped with a resilient, leak-proof valve seat AT NO EXTRA COST! This rubberized, resilient valve seat marks another advancement in Carter ingenuity and carburetor design. Also, the resilient seat assembly is available in Carter Zip-Kits for service of all popular makes of carburetors. Check your inventory . . . stock up with Carter Fuel System Products.

**SELL MORE—SERVE BETTER—WITH CARTER
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CARTER CARBURETOR

DIVISION OF ACF INDUSTRIES, INC.



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Selected Data of 1962 Passenger Cars

Including Compact Cars and All Optional Engines

All dimensions and weights apply to lowest priced four-door sedan or nearest equivalent model

MAKE AND MODEL	Wheelbase (in.)	OVERALL DIMENSIONS (in.)			TIRE SIZE (in.)	No. of Cylinders	ENGINES				EQUIPMENT AVAILABILITY				Shipping Weight (Lb.)
		Length	Width	Height at Curb Weight			Bore and Stroke (in.)	Displacement (Cu. in.)	Compression Ratio (to 1)	Maximum Brake Horsepower at RPM	Automatic Transmission	Power Steering	Power Brakes		
AMERICAN MOTORS CORP.															
Rambler..... American (Deluxe, Custom)	100.0	173.1	70.0	56.1	6.00x15	6	3 1/2 x 4 1/4	185.0	8.00	90-3800	Opt	NA	Opt	2500	
..... American 400 (Std.); Deluxe & Custom (Eng. Opt.)	100.0	173.1	70.0	56.1	6.00x15	6	3 1/2 x 4 1/4	185.0	8.70	125-4200	Opt	Opt	Opt	2500	
..... Classic	108.0	190.0	72.4	57.5	6.50x15	6	3 1/2 x 4 1/4	185.0	8.70	127-4200	Opt	Opt	Opt	2940	
..... Ambassador	108.0	190.0	72.4	57.8	7.00x14	6	4 x 3 1/4	127.0	8.70	250-4700	Opt	Opt	Opt	3275	
CHECKER MOTORS CORP.															
Checker..... Superba, Marathon	120.0	199.5	78.0	62.8	6.70x15	6	3 1/2 x 4 1/4	226.0	7.30	80-3100	Opt	Opt	Opt	3320	
..... Superba, Marathon (Eng. Opt.)	120.0	199.5	78.0	62.8	6.70x15	6	3 1/2 x 4 1/4	226.0	8.00	122-4000	Opt	Opt	Opt	3380	
CHRYSLER CORP.															
Chrysler..... Newport	122.0	214.9	79.4	55.2	8.00x14	6	4 1/2 x 3 1/2	181.0	9.00	265-4400	Opt	Opt	Opt	3720	
..... 300	122.0	214.9	79.4	55.2	8.00x14	6	4 1/2 x 3 1/2	183.0	10.00	305-4600	Opt	Std	Opt	3810	
..... 300 (Eng. Opt.)	122.0	214.9	79.4	55.2	8.00x14	6	4 1/2 x 3 1/2	183.0	10.10	340-4800	Opt	Std	Opt	3810	
..... 300-H	122.0	215.3	79.4	55.5	7.60x15	6	4 1/2 x 3 1/2	173.0	10.10	380-5200	Opt	Std	Std	4050	
..... New Yorker	128.0	219.3	79.4	55.4	8.50x14	6	4 1/2 x 3 1/2	173.0	10.10	340-4600	Std	Std	Std	3950	
Dodge Dart..... Dart 330, 440	116.0	202.0	76.5	53.7	6.50x14	4	3 1/2 x 4 1/4	25.0	8.20	145-4000	Opt	Opt	Opt	3010	
..... Dart 330, 440	116.0	202.0	76.5	54.0	7.00x14	4	3 1/2 x 4 1/4	25.0	9.00	230-4400	Opt	Opt	Opt	3155	
..... D-500 (Eng. Opt.)	116.0	202.0	76.5	54.0	7.00x14	4	3 1/2 x 4 1/4	25.0	9.00	305-4600	Opt	Opt	Opt	3155	
Dodge Lancer..... 170, 770, GT	106.5	188.8	72.3	53.4	6.50x13	4	3 1/2 x 4 1/4	161.0	8.20	101-4400	Opt	Opt	Opt	2835	
Dodge Polara..... 800	106.5	188.8	72.3	53.4	6.50x13	4	3 1/2 x 4 1/4	161.0	8.20	145-4000	Opt	Opt	Opt	2905	
Imperial..... Custom, Crown, Le Baron	116.0	202.0	76.5	54.0	7.00x14	4	3 1/2 x 4 1/4	161.0	9.00	305-4600	Opt	Opt	Opt	3300	
Plymouth..... Savoy, Belvedere, Fury	129.0	227.1	81.7	56.8	8.20x15	6	4 1/2 x 3 1/2	473.0	10.10	340-4600	Std	Std	Std	4665	
..... Savoy, Belvedere, Fury	116.0	202.0	76.5	53.7	6.50x14	4	3 1/2 x 4 1/4	25.0	8.20	145-4000	Opt	Opt	Opt	3000	
..... Sport Fury (Std.); Golden Commande (Eng. Opt.)	116.0	202.0	76.5	54.0	7.00x14	4	3 1/2 x 4 1/4	25.0	9.00	230-4400	Opt	Opt	Opt	3140	
Valiant..... V-100, V-200, Signet 200	106.5	184.2	70.4	53.4	6.50x13	4	3 1/2 x 4 1/4	161.0	8.20	101-4400	Opt	Opt	Opt	2500	
..... V-100, V-200, Signet 200 (Eng. Opt.)	106.5	184.2	70.4	53.4	6.50x13	4	3 1/2 x 4 1/4	161.0	8.20	145-4000	Opt	Opt	Opt	2470	
FORD MOTOR CO.															
Cornet..... Standard, Custom, S-22	114.0	194.8	70.4	54.5	6.00x13	6	3 1/2 x 2 1/2	144.0	8.70	85-4200	Opt	NA	NA	2437	
..... Standard, Custom, S-22 (Eng. Opt.)	114.0	194.8	70.4	54.5	6.00x13	6	3 1/2 x 2 1/2	170.0	8.70	101-4400	Opt	NA	NA	2494	
Fairlane..... Fairlane, Fairlane 500	115.5	197.0	71.0	55.5	6.50x13	6	3 1/2 x 2 1/2	170.0	8.70	101-4400	Opt	Opt	Opt	2730	
Falcon..... Fairlane, Fairlane 500	115.5	197.0	71.0	55.5	6.50x13	6	3 1/2 x 2 1/2	170.0	8.70	143-4500	Opt	Opt	Opt	2888	
Falcon..... Falcon, Futura	109.5	181.1	70.6	54.5	6.00x13	6	3 1/2 x 2 1/2	144.0	8.70	85-4200	Opt	NA	NA	2296	
Ford..... Falcon, Futura (Eng. Opt.)	109.5	181.1	70.6	54.5	6.00x13	6	3 1/2 x 2 1/2	170.0	8.70	101-4400	Opt	NA	NA	2296	
..... Galaxie 100, 500	118.0	209.3	79.2	54.8	7.50x14	6	3 1/2 x 3 1/2	223.0	8.40	135-4000	Opt	Opt	Opt	3561	
..... Galaxie 100, 500 (Eng. Opt.)	118.0	209.3	79.2	54.8	7.50x14	6	3 1/2 x 3 1/2	223.0	8.80	175-4200	Opt	Opt	Opt	3882	
Lincoln Continental..... Galaxie 100, 500 (Eng. Opt.)	118.0	209.3	79.2	54.8	7.50x14	6	4 x 3 1/2	262.0	8.80	220-4400	Opt	Opt	Opt	3741	
Mercury..... Monterey	123.0	213.0	75.6	53.7	6.00x14	4	4 1/2 x 3 1/2	190.0	9.00	300-4100	Std	Std	Std	3780	
..... Monterey (Eng. Opt.)	120.0	215.5	79.5	54.9	7.50x14	6	3 1/2 x 3 1/2	223.0	8.40	135-4000	Opt	Opt	Opt	3714	
..... Monterey (Eng. Opt.)	120.0	215.5	79.5	54.9	7.50x14	6	4 x 3 1/2	223.0	8.80	170-4200	Opt	Opt	Opt	3825	
Meteor..... Standard, Custom	120.0	215.5	79.5	54.9	7.50x14	6	4 x 3 1/2	223.0	8.80	220-4300	Opt	Opt	Opt	3873	
Thunderbird..... Standard, Custom	116.5	203.8	71.3	55.8	7.00x14	6	3 1/2 x 2 1/2	170.0	8.70	101-4400	Opt	Opt	Opt	2816	
..... Standard, Custom	116.5	203.8	71.3	55.8	7.00x14	6	3 1/2 x 2 1/2	221.0	8.70	145-4400	Opt	Opt	Opt	2974	
..... Standard, Custom	113.2	205.0	70.0	52.5	8.00x14	6	4 1/2 x 3 1/2	190.0	9.00	300-4000	Std	Std	Std	4111	
GENERAL MOTORS CORP.															
Buick..... Special Standard	112.0	188.4	71.3	52.8	6.50x13	6	3 1/2 x 3 1/2	190.0	8.80	135-4000	Opt	Opt	Opt	2686	
..... Special Deluxe	112.0	188.4	71.3	52.8	6.50x13	6	3 1/2 x 3 1/2	275.0	8.80	155-4000	Opt	Opt	Opt	2648	
..... Skylark (Std.); Standard, Deluxe (Eng. Opt.)	112.0	188.4	71.3	52.1	6.50x13	6	3 1/2 x 2 1/2	175.0	11.00	190-4800	Opt	Opt	Opt	2707	
Cadillac..... Le Sabre	123.0	214.1	78.0	56.3	7.00x15	6	4 1/2 x 3 1/2	471.0	10.25	290-4400	Std	Opt	Opt	4104	
..... Invicta	123.0	214.1	78.0	56.3	7.00x15	6	4 1/2 x 3 1/2	471.0	10.25	325-4400	Std	Std	Opt	4198	
..... Fleetwood 60	126.0	220.1	78.0	57.0	8.00x15	6	4 1/2 x 3 1/2	471.0	10.25	325-4400	Std	Std	Std	4404	
Cadillac..... Fleetwood 75	129.5	222.0	79.0	56.6	8.00x15	6	4 1/2 x 3 1/2	471.0	10.50	325-4000	Std	Std	Std	4640	
..... Fleetwood 80	129.5	222.0	79.0	56.6	8.00x15	6	4 1/2 x 3 1/2	471.0	10.50	325-4000	Std	Std	Std	4710	
Chevrolet..... Fleetwood 75	149.8	242.3	80.6	59.1	8.20x15	6	4 1/2 x 3 1/2	390.0	10.50	325-4000	Std	Std	Std	5325	
..... Biscayne, Bel Air, Impala	119.0	209.6	79.0	55.5	7.00x14	6	3 1/2 x 3 1/2	235.5	8.25	135-4000	Opt	Opt	Opt	3450	
..... Biscayne, Bel Air, Impala (Eng. Opt.)	119.0	209.6	79.0	55.5	7.00x14	6	3 1/2 x 3 1/2	235.5	8.50	170-4200	Opt	Opt	Opt	3485	
..... Biscayne, Bel Air, Impala (Eng. Opt.)	119.0	209.6	79.0	55.5	7.00x14	6	4 x 3 1/2	277.0	10.50	250-4400	Opt	Opt	Opt	3455	
Chevy II..... 100, 300, Nova 400	119.0	209.6	79.0	55.0	6.00x14	4	4 1/2 x 3 1/2	170.0	11.00	300-5000	NA	Opt	Opt	3455	
Corvair..... 100, 300, Nova 400	110.0	183.0	70.8	55.0	6.00x13	4	3 1/2 x 3 1/2	144.0	8.50	90-4000	Opt	Opt	Opt	2430	
Corvair..... 500, 700, Monza 900	108.0	180.0	67.0	51.5	6.50x13	6	3 1/2 x 2 1/2	145.0	8.00	80-4400	Opt	NA	NA	2370	
Corvette..... 800	102.0	176.7	70.4	52.2	6.70x15	6	4 x 3 1/2	127.0	10.50	250-4400	Opt	NA	NA	2903	
Oldsmobile..... F-85	112.0	188.2	71.6	52.7	6.50x13	6	3 1/2 x 2 1/2	215.0	8.75	155-4800	Opt	NA	NA	2634	
..... Dynamic 88	123.0	213.9	77.9	55.8	8.00x14	6	4 1/2 x 3 1/2	294.0	10.25	290-4400	Opt	Opt	Opt	4038	
..... Super 88	123.0	213.9	77.9	55.8	8.00x14	6	4 1/2 x 3 1/2	294.0	10.25	330-4600	Opt	Opt	Opt	4089	
..... 96	126.0	220.0	77.9	56.6	8.00x14	6	4 1/2 x 3 1/2	314.0	10.25	330-4000	Std	Std	Std	4256	
Pontiac..... Starfire 88	126.0	220.0	77.9	56.6	8.00x14	6	4 1/2 x 3 1/2	314.0	10.50	345-4600	Std	Std	Std	4213	
..... Catalina	120.0	211.6	78.6	55.9	8.00x14	6	4 1/2 x 3 1/2	294.0	8.60	15-3600	Opt	Opt	Opt	3749	
..... Star Chief	123.0	218.6	78.6	55.9	8.00x14	6	4 1/2 x 3 1/2	294.0	8.60	215-3600	Opt	Opt	Opt	3865	
..... Bonneville	123.0	218.6	78.6	55.9	8.00x14	6	4 1/2 x 3 1/2	294.0	8.60	235-3600	Opt	Opt	Opt	3933	
..... Grand Prix	120.0	211.6	78.6	54.5	8.00x14	6	4 1/2 x 3 1/2	294.0	10.25	303-4600	Opt	Opt	Opt	3795	
Tempest.....	112.0	189.3	72.2	53.6	6.00x15	4	4 1/2 x 3 1/2	164.5	8.00	115-3500	Opt	Opt	NA	2816	
.....	112.0	189.3	72.2	53.6	6.00x15	4	3 1/2 x 2 1/2	215.0	10.25	195-4800	Opt	NA	NA	2916	
STUDEBAKER-PACKARD CORP.															
Studebaker..... Lark Deluxe, Regal, Daytona	113.0	188.0	71.3	55.8	6.00x15	6	3 x 4	160.0	8.25	112-4500	Opt	Opt	Opt	2780	
..... Lark Deluxe, Regal, Daytona, Cruiser	113.0	188.0	71.3	55.8	6.50x15	6	3 1/2 x 3 1/2	199.0	8.50	160-4500	Opt	Opt	Opt	3015	
..... Lark Deluxe, Regal, Daytona, Cruiser (Eng. Opt.)	113.0	188.0	71.3	55.8	6.50x15	6	3 1/2 x 3 1/2	199.0	8.50	210-4500	Opt	Opt	Opt	3015	
..... Hawk	120.5	204.0	71.0	54.7	6.70x15	6	3 1/2 x 3 1/2	258.2	8.50	210-4500	Opt	Opt	Opt	3285	
..... Hawk (Eng. Opt.)	120.5	204.0	71.0	54.7	6.70x15	6	3 1/2 x 3 1/2	258.2	8.50	180-4500	Opt	Opt	Opt	3285	

ABBREVIATIONS: —Available only with automatic transmission; not available when V-6 and air conditioning are specified.
 1—7.50x14 on Bel Air and Impala models. NA—Not available. Opt—Optional at extra cost.

1—Available only with automatic transmission.
 Std—Standard equipment.

1962 PASSENGER CAR PRICE, WEIGHT AND BODY TABLE

The Suggested Retail Price is for cars with standard equipment and includes Federal excise taxes and preparation and conditioning charges. Transportation charges, state or local taxes, finance charges, and optional equipment are extra.

MAKE, MODEL AND BODY TYPE	Suggested Retail Price	Wheelbase (in.)	Shipping Weight (lb.)	MAKE, MODEL AND BODY TYPE	Suggested Retail Price	Wheelbase (in.)	Shipping Weight (lb.)	MAKE, MODEL AND BODY TYPE	Suggested Retail Price	Wheelbase (in.)	Shipping Weight (lb.)	MAKE, MODEL AND BODY TYPE	Suggested Retail Price	Wheelbase (in.)	Shipping Weight (lb.)	MAKE, MODEL AND BODY TYPE	Suggested Retail Price	Wheelbase (in.)	Shipping Weight (lb.)
AMERICAN MOTORS CORP.				CHRYSLER CORP., DODGE, cont'd				FORD MOTOR CO., cont'd				GENERAL MOTORS CORP., BUICK, cont'd				GENERAL MOTORS CORP., CHEVROLET, cont'd			
RAMBLER				Lancer GT				FORD				Sta. Wag., 3s.				Corvette			
American 8				Hardtop, 2d.				Fairlane 8t				Convertible.				Convertible.			
DeLuxe				Dart 8t				Sedan, 2d.				Spec. Del. 8				OLDSMOBILE			
Sedan, 2d.				Sedan, 2d.				Sedan, 4d.				Sedan, 4d.				F-88			
1846 100				2313 116				2345 115.5				2593 112				Cib. Coupe.			
2500 100				2369 116				2407 115.5				2579 112				Sedan, 4d.			
2081 100				2381 116				2415 115.5				2690 112				Del. Sed., 4d.			
2130 100				2416 116				2475 115.5				2890 112				Cutl. Cpe.			
2573 100				2447 116				2562 119				2891 112				Sta. Wag., 2s.			
Custom				Dart 8-330t				Galaxie**				Skykirk				88			
Sedan, 2d.				Sedan, 2d.				Sedan, 4d.				Sedan, 4d.				Col. Sed., 4d.			
1908 100				Sedan, 4d.				Sedan, 2d.				Sedan, 2d.				Hol. Coupe.			
2482 100				2505 116				2562 119				3091 123				Hol. Sed., 4d.			
2612 100				2536 116				2616 119				3227 123				Convertible.			
2141 100				2536 116				2616 119				3227 123				Sta. Wag., 3s.			
2565 100				2636 116				2616 119				3227 123				Cutl. Conv.			
2190 100				2636 116				2616 119				3227 123				Sta. Wag., 2s.			
400				2636 116				2616 119				3227 123				Convertible.			
Sedan, 2d.				2636 116				2616 119				3227 123				Est. Wag., 2s.			
2040 100				2636 116				2616 119				3227 123				Est. Wag., 3s.			
2089 100				2636 116				2616 119				3227 123				2859 112			
2320 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
2340 100				2636 116				2616 119				3227 123				2859 112			
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NOW...the new
McQUAY-NORRIS

MI-1000 ENGINE BEARING

EXTRA

- ✓ Durability
- ✓ Conformability
- ✓ Imbedability



THE *Blue Box* LINE[®]
...synonymous with quality

The **MI-1000** engine bearing has an "extra thin" babbitt lining only .001 of an inch thick, electrolytically applied on a hard and durable sintered copper-lead base. The **MI-1000** has the fine anti-friction qualities of babbitt plus the terrific strength of copper-lead—so it is easy on the shaft, yet won't pound out under the most severe service.

The combination of the **MI-1000** plus McQuay-Norris Heavy Duty, Chrome Control, Leak-Proof Piston Ring set, not only keeps the job running longer, but also cuts gas and oil costs.

Let your McQuay-Norris Wholesaler supply you with the new MI-1000 engine bearing!



the new **MI-1000** ENGINE BEARING

1. Precision Steel Back
2. Sintered Copper-lead Lining
3. Barrier Plate
4. One thousandth of an Inch Babbitt Overlay
5. Pure Tin Flash

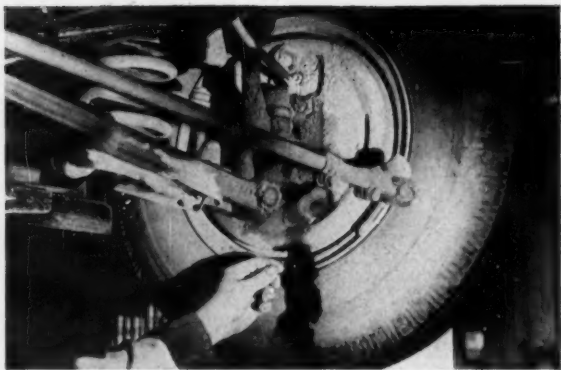
McQUAY-NORRIS

McQUAY-NORRIS
MANUFACTURING CO.
ST. LOUIS • TORONTO





Pedal locking or binding may mean bent or distorted linkage or loose master cylinder mounting.



Inspect backing plate and drum. Stains or dampness means fluid or grease leaks.

How you can build by making every brake

The sure way to win the complete confidence of your brake customers—and thereby make *repeat* customers of them—is to make sure that every brake job you turn out is a *complete* job.

No brake shop is going to build a business—or a good reputation—by only doing half a job. Furthermore, by doing a *complete* job, you not only please the customer—eliminating costly comebacks—but you generally increase your sales, and make more money. The more work you do, the more parts you sell, the more brake fluid and grease you dispense, the more profit you will make.

This is all very fine, you say, but how do you sell the customer on the need for a complete brake job, because obviously it takes more time and costs the customer more?

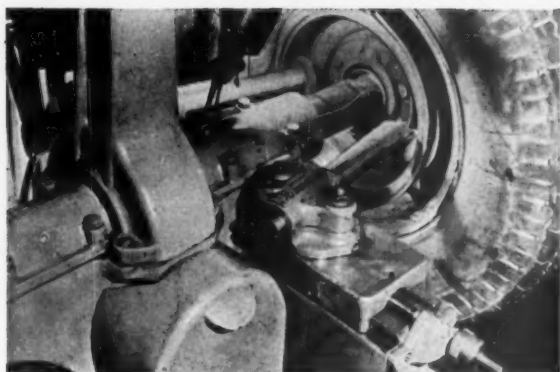
Probably the best method is to make certain that the customer *understands* the reasoning behind your telling him that he needs this complete service. Once you have told him, "A brake system is only as safe as its weakest part," what do you do? You remove a wheel, preferably all four wheels, and you point out to the customer the reasons

behind your thinking. Explain that the hydraulic system controls the brake. Tell him that unless this hydraulic system is in tip-top shape the importance of the new brake lining is proportionately lessened. Explain how the wheel cylinder works, how the master cylinder operates, the importance of serviceable hoses, the necessity for fresh brake fluid.

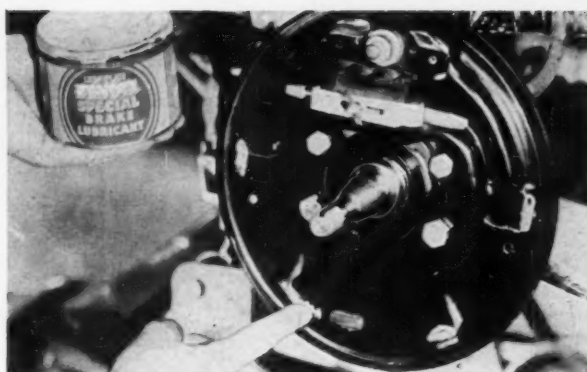
After you have explained the importance of the hydraulic system, point out the importance of the brake drum. Explain that the drums absorb the work. If the drums are scored, out of round or thin, they cannot do a satisfactory job.

What do you look for when you pull a wheel? First, you check the thickness of the brake lining. If the old lining is worn almost to the rivet heads, or to the shoe platform on bonded lining, or if the lining is charred, or soaked with grease or fluid, point out these facts and explain why the lining needs replacing. Also stress the importance of replacing the linings on all four brakes—not just one or two.

Check the wheel cylinder for leakage and the rubber boots for proper elasticity. Ex-



Drums should be ground or honed smooth so lining will not wear out rapidly.



The backing plate should be cleaned and the shoe guides lubricated with high temperature grease.

profitable repeat sales job a *COMPLETE* job

plain that grease on the lining causes brake fade, grab, and noise. Boots with poor elasticity allow dirt to enter the wheel cylinders.

Examine the brake drum. Explain that drums which have been scored or heat-checked should be turned for best braking action and proper lining life. Never recommend the use of a drum that is more than .060 inches over standard diameter.

Pointing out these needed services *as you remove the wheels* is the best way to convince the customer that he needs a complete brake job **NOW**.

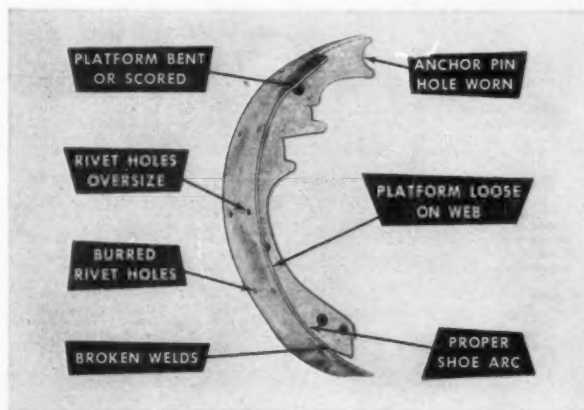
And performing a *complete* job for him is the best way to build profitable repeat sales. (To clinch the deal and make sure you never lose a customer, be sure to use only high-quality American Brakeblok on all re-lining jobs.)



*American
Brakeblok.*

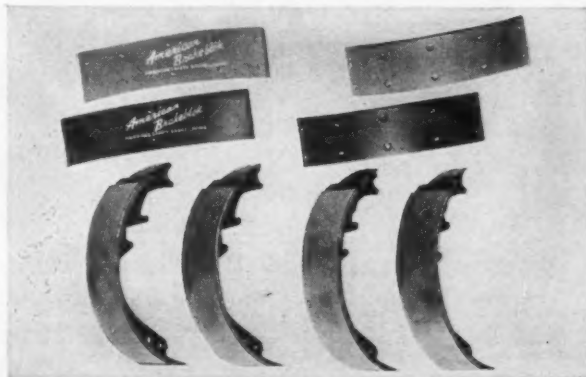
P. O. BOX 21 • BIRMINGHAM, MICH.

MOTOR AGE • December 1961



Brake shoes should be replaced if any of the faults listed above are found.

American Brakeblok jobbers can furnish you with highest quality riveted or bonded linings for every requirement.



Scoreboard

1961 NEW PASSENGER CAR REGISTRATIONS BY MAKE AND MODEL

Make	September		Nine Months	
	1961	1960	1961	1960
Rambler				
American.....	11,166	8,508	98,021	83,789
Classic-8.....	16,412	20,674	182,051	219,568
Classic-8.....	493	977	8,520	11,982
Ambassador.....	1,129	1,257	13,467	16,175
TOTAL AMERICAN MOTORS.....	29,200	31,416	270,367	327,421
% of Total.....	7.88	6.85	6.40	6.63
Chrysler				
Newport.....	3,132	...	35,480	...
Windoor.....	656	3,540	11,167	39,314
New Yorker.....	917	994	14,256	15,203
Station Wagon.....	197	119	3,680	2,927
Total.....	4,902	4,653	64,502	57,444
Imperial.....	543	894	7,432	11,357
Dodge				
Lancer.....	4,359	...	48,821	...
Dart.....	10,777	19,381	110,519	246,295
Polara.....	620	2,382	9,882	32,325
Total.....	15,756	21,763	167,222	278,620
Plymouth				
Valiant.....	9,760	16,125	88,837	150,094
Savoy.....	3,482	5,555	40,596	58,985
Belvedere.....	3,249	3,412	33,523	46,816
Fury.....	2,771	2,476	34,575	41,199
Station Wagon.....	2,504	2,871	27,098	45,712
Total.....	21,776	30,439	224,829	342,806
TOTAL CHRYSLER CORP.....	42,977	57,749	483,765	670,227
% of Total.....	11.60	12.59	10.90	13.97
Ford				
Falcon.....	35,782	31,004	367,502	333,587
Fairlane.....	19,632	31,281	210,469	323,049
Galaxie.....	19,758	16,712	242,173	196,367
Station Wagon.....	7,912	9,884	87,606	123,656
Thunderbird.....	4,856	6,685	60,259	81,433
Total.....	87,962	95,536	978,011	1,040,092
Lincoln Continental.....	1,832	1,266	20,752	15,839
Mercury				
Meteor.....	3,030	...	34,664	...
Monterey.....	3,414	8,080	38,763	78,953
Montclair.....	26	1,419	988	20,407
Stauon Wagon.....	886	1,419	12,424	16,232
Total.....	7,356	10,918	86,839	113,492
Comet.....	12,996	15,761	138,529	102,930
TOTAL FORD MOTOR CO.....	110,048	123,481	1,224,131	1,272,353
% of Total.....	29.76	26.91	29.00	25.74

Make	September		Nine Months	
	1961	1960	1961	1960
Buick				
Special.....	4,443	...	62,640	...
La Sabre.....	6,297	9,655	78,479	108,759
Invicta.....	1,442	2,292	20,535	29,755
Electra.....	1,725	2,844	32,943	40,235
Station Wagon.....	211	566	5,540	9,117
Total.....	14,118	15,357	200,137	187,966
Cadillac	8,693	9,469	100,642	107,651
Chevrolet				
Corvair.....	15,174	17,702	236,169	165,365
Biscayne.....	13,729	24,247	151,762	226,861
Bel Air.....	20,307	28,578	246,626	300,345
Impala.....	25,492	34,023	358,271	416,924
Station Wagon.....	7,645	14,342	130,662	175,279
Corvette.....	362	592	8,484	8,273
Total.....	82,709	119,484	1,131,994	1,295,038
Oldsmobile				
F-85.....	4,289	...	50,604	...
88.....	13,701	20,047	134,806	199,325
88.....	2,717	2,731	27,504	35,664
Station Wagon.....	651	1,129	10,347	15,605
Total.....	21,358	23,907	223,261	253,734
Pontiac				
Tempest.....	7,478	...	78,164	...
Catalina.....	6,754	13,277	72,917	138,382
Ventura.....	1,380	3,897	19,769	41,303
Star Chief.....	2,002	2,831	22,822	31,725
Bonneville.....	4,592	4,940	48,713	59,155
Station Wagon.....	1,408	2,519	16,686	28,514
Total.....	23,612	27,564	258,051	299,079
TOTAL GENERAL MOTORS CORP.....	150,609	195,781	1,915,085	2,143,568
% of Total.....	40.65	42.67	45.37	43.37
Studebaker	4,018	8,126	49,446	84,402
% of Total.....	1.08	1.77	1.17	1.71
Checker	308	488	3,917	5,039
King Midget.....	14	17	319	196
Misc. Domestic.....	31	1,266*	1,599	21,395*
Total.....	353	1,771	5,635	26,630
% of Total.....	0.10	0.39	0.13	0.54
Foreign.....	33,309	40,441	293,574	397,268
% of Total.....	8.99	8.82	6.95	8.04
GRAND TOTAL.....	370,505	458,765	4,222,026	4,941,889

* Includes De Soto.

Compiled from official state records. Data property of R. L. Polk & Co. May not be copied, sold or reprinted without Polk permission.

1961 NEW IMPORTED CAR REGISTRATIONS

SEPTEMBER		NINE MONTHS	
1961	1960	1961	1960
Volkswagen.....	14,887	Volkswagen.....	13,900
Renault.....	4,696	Renault.....	4,165
Volvo.....	1,514	Simca.....	2,010
Triumph.....	1,246	Opel.....	1,856
Mercedes Benz.....	1,172	English Ford.....	1,556
Austin Healey.....	849	Triumph.....	1,552
M.G.....	848	Fiat.....	1,520
Fiat.....	845	Volvo.....	1,375
Metropolitan.....	807	Austin Healey.....	1,309
Simca.....	705	Mercedes Benz.....	1,291
All Others.....	5,740	All Others.....	9,907
Total.....	33,309	Total.....	40,441

NINE MONTHS		NINE MONTHS	
1961	1960	1961	1960
Volkswagen.....	134,411	Volkswagen.....	115,467
Renault.....	33,712	Renault.....	34,061
Fiat.....	9,480	Opel.....	22,082
Mercedes Benz.....	9,414	English Ford.....	20,900
Volvo.....	9,012	Fiat.....	17,538
Triumph.....	8,951	Triumph.....	14,523
English Ford.....	7,812	Simca.....	13,860
Austin Healey.....	7,234	Austin Healey.....	13,743
Metropolitan.....	7,080	M.G.....	10,949
M.G.....	7,072	Mercedes Benz.....	10,857
All Others.....	99,396	All Others.....	103,278
Total.....	293,574	Total.....	397,268

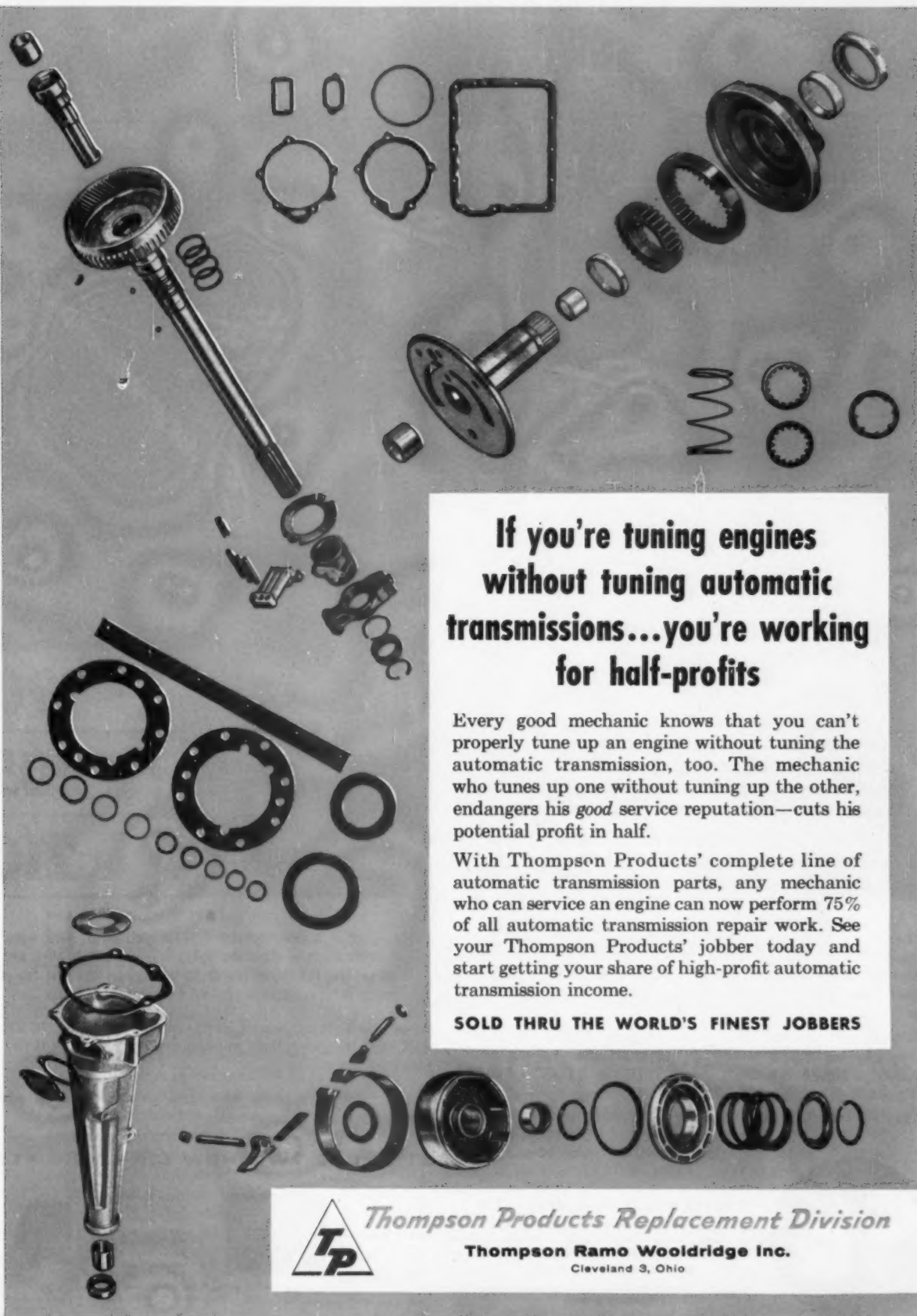
1961 NEW CAR REGISTRATIONS

by Price Groups

Price Group	September		Nine Months	
	1961	1960	Units	% of Total
Up to \$2,700.....	301,819	353,835	3,413,219	80.85
\$2,701 to \$3,200.....	39,099	66,970	434,057	10.28
\$3,201 to \$4,000.....	11,830	34,314	187,110	3.72
\$4,001 and Over.....	17,697	13,646	217,640	5.15
Total.....	370,505	458,765	4,222,026	100.00

by Number of Cylinders

Number of Cylinders	September		Nine Months	
	1961	1960	Units	% of Total
Four Cylinders.....	40,785	40,441	371,738	8.80
Six Cylinders.....	190,734	202,481	1,790,719	42.41
Eight Cylinders.....	169,968	215,943	2,009,569	48.79
Total.....	370,505	458,765	4,222,026	100.00



**If you're tuning engines
without tuning automatic
transmissions...you're working
for half-profits**

Every good mechanic knows that you can't properly tune up an engine without tuning the automatic transmission, too. The mechanic who tunes up one without tuning up the other, endangers his *good* service reputation—cuts his potential profit in half.

With Thompson Products' complete line of automatic transmission parts, any mechanic who can service an engine can now perform 75% of all automatic transmission repair work. See your Thompson Products' jobber today and start getting your share of high-profit automatic transmission income.

SOLD THRU THE WORLD'S FINEST JOBBERS



Thompson Products Replacement Division

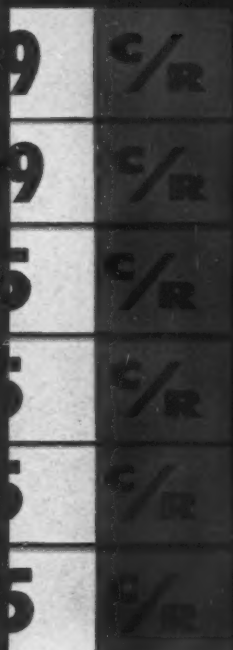
Thompson Ramo Wooldridge Inc.

Cleveland 3, Ohio

C/R stock numbers
tell you
shaft size
immediately!



this C/R oil seal
fits shaft with
dia. of 1 1/8" or 1.375"



ONE 13865



ONE 19011

ONE 20526

ONE 21070

There's no "catalog reaching and seeking" when determining shaft sizes for C/R oil seals. You can tell from the stock number immediately. Take the number on the illustrated box: This C/R oil seal fits a shaft with a diameter of 1 1/8" or 1.375".

Analyze with us the other four numbers: 13865 fits shaft dia. 1 1/8" or 1.375" — 19011 fits shaft dia. 1-29/32" or 1.906" — 20526 fits shaft dia. 2-1/16" or 2.063" — 21070 fits shaft dia. 2 1/8" or 2.125".

Easy isn't it! C/R has the only numbering system in the

industry that makes sense...tells you what you need to know immediately. Besides this, C/R part numbers are included on the inside of the tuck-in flap on the box for positive cross reference.

When the C/R catalog is used, you'll find it too, is simple and easy to understand making ordering and identifying a pleasure for a change.

Always look to C/R for important innovations that add to your profit and pleasure.

GET THESE TWO NEW C/R BOOKLETS

New "How To Set Up To Sell Oil Seals" Brochure reveals all new '61 C/R merchandising aids that promote brake re-lines... wheel repacks. Ask your C/R supplier or write C/R.



Facts Booklet on C/R SCOTSeal tells about only conversion kit for trailer wheel bearings that permits use of SAE-30 oil. Reduces fleet down-time. Ask C/R supplier or write C/R.



SEAL OF
PROVED PERFORMANCE

**CHICAGO RAWHIDE
MANUFACTURING COMPANY**

SERVICE SALES DIVISION
CHICAGO 22, ILLINOIS

In Canada: Chicago Rawhide Products Canada Limited,
Brantford, Ontario
Export: Geon International Corp., Great Neck, New York

JOBBER EXECUTIVE EDITION

J. E. BICKEL, vice president-merchandising for Monroe Auto Equipment Co., honored by Automotive Warehouse Distributors Association at annual Convention.

AWDA's AUTOMOTIVE Man of the Year

J. E. BICKEL, vice president-merchandising for Monroe Auto Equipment Co., has been named "Automotive Man of the Year" by the Automotive Warehouse Distributors Association.

The first representative of an automotive parts manufacturer to receive this President's Award from the AWDA, Mr. Bickel was cited "For—the promotion of bold ideas which led to a new concept of merchandising automotive replacement parts on all distribution and consumer levels."

The award was made at the annual AWDA convention in Kansas City on Nov. 1. It is symbolized by a two-and-one-half foot silver trophy, suitably inscribed.

The additional honor comes to a man who has been recognized previously for his contribution to the automotive parts industry. Mr. Bickel is now in his second term as president of the Automotive Electric Association. Last year he was given an award of merit by the United States Chamber of Commerce on behalf of AEA in recognition of its role as a trade and professional organization. He has also served as chairman of several key committees of the Automotive Service Industry.

Mr. Bickel came to Monroe Auto Equipment Company in 1944 as a management consult-



J. E. Bickel

ant and in 1947 was made sales manager of the Original Equipment Division of the company. A year later he was named merchandising manager of the replacement division. In 1958 he was elected a vice president and named as a member of the Board

of Directors of Monroe.

He is an alumnus of Oklahoma A & M and of Harvard Graduate School. Before joining Monroe, he had several years' experience as an automotive jobber and was also associated in the car and parts dealer business.



The work day is done and the fleet of trucks belonging to Donaldson Sales, Inc. are neatly lined along the left side of the parking field located on Jericho Turnpike at Smithtown, Long Island. Sign at left calls attention to the modern shop maintained by proprietor, Blake Donaldson.

Quick service means QUICK PROFITS

This automotive parts and machine shop on Long Island, N.Y., attributes its success to service and a sensible, orderly arrangement of merchandise

EIGHT years ago Blake Donaldson launched Donaldson Sales, Inc., Automotive Parts and Machine Shop, on Jericho Turnpike, Smithtown—a modest Long Island community about a half-hundred miles from New York City—as a two-man, practically 'round-the-clock operation. President Donaldson, as chief salesman of the organization, was Mr. Outside and his hard-working helper, Jim Ruggles, was Mr. Inside, handling the counter and filling the orders while the boss was out drumming up business.

An investment of less than \$10,000 put still twentyish Blake Donaldson in business, including an inventory of auto parts totaling approximately \$3,900. The year was 1953 and the first annual gross reached a not staggering \$22,000. Today, Donaldson Sales, Inc. stocks about 3,000 brand-name lines adding up to more than 100,000 varieties of merchandise and the estimated 1961 gross should figure in the substantial neighborhood of \$350,000.

Obviously it took more than the rapid growth of a steadily expanding suburban population to

account for the solid progress achieved each year since 1953 by the firm headed by the still youthful president. Let Donaldson himself pinpoint the formula:

"Service . . . a sensible, orderly arrangement of our merchandise . . . more service . . . and more orderliness and cleanliness," is the way he assesses his success technique.

"When I opened my first shop on practically a wheel and a prayer," the Smithtown automotive parts proprietor recalls, "I had finished a tour of selling to jobbers for a couple of major manufacturers. Calling on parts and machine shops I noticed an unhappy tendency on the part of many owners to store goods in so haphazard a fashion they couldn't readily put their fingers on half the merchandise they stocked. The result was they weren't able to give anything resembling fast delivery. Learning at least this much from my first-hand experience, I immediately put into operation an orderly, if small shop, and things began to hum right away."

Along the lines of the type of service he



Rebuilt engine occupies prominent position in foreground as proprietor Blake Donaldson of Donaldson Sales, Inc. joins his staff in a 12 foot deep display space at front of his shop.



One man attaches chain to engine block while another employee mans the controls.

stresses, young Donaldson recalls with no great glee the many tedious treks he made with his lone truck to and from New York City, a 100-mile round trip over busy highways, in the early days of his venture to provide that certain service he values so highly to a repair shop, a service station or a car agency in desperate need of a part.

"What we didn't stock, and of course our early inventory was financially limited, we made it our business to get." Today of course Donaldson Sales stocks just about everything of immediate need and uses its fleet of seven panel trucks mostly for making deliveries. The four parts department drivers run generally regular routes while machine shop men use their trucks where needed. And no longer does the president do a 24-hour stint. Store hours are 8 a.m. to 5 p.m. daily, a half day on Saturdays and never on Sundays.

From the early days, Blake Donaldson nourished another persistent thought. He watched the rise of the supermarket in the food field in nearby rural communities and he properly assessed the need for similar large-selection, large purchase

merchandising methods in his own business. The savings effected by bulk purchase would increase his own profits, he theorized. It would also result in some savings to his already growing clientele. This would make his establishment the headquarters for the buyer who could always be sure to get what he wanted when he called, either in person or by telephone, for an urgently needed part or a quick machine job.

Though Donaldson practiced his business principles as best he could under the limitations of

Continued on page V

THE

PULSE

OF

AUTOMOTIVE

BUSINESS

Automotive Wholesaler's Sales and Inventories

Data from the Bureau of the Census, Dept. of Commerce

Region	Per Cent Change in				
	Sales	Sales	Inventories	Inventories	
	Sept. 1961 from Sept. 1960	Sept. 1961 from Aug. 1961	9 Mos. 1961 from 9 Mos. 1960	Sept. 1961 from Sept. 1960	Sept. 1961 from Aug. 1961
New England.....	-3	-8	-2	...	...
Middle Atlantic.....	0	...	+1	+2	0
East North Central.....	-1	-5	-2	+8	+3
West North Central.....	-5	-6	-2	+1	0
South Atlantic.....	+2	-4	+3	+7	+1
East South Central.....	-3	-8	+2	+12	0
West South Central.....	+5	-9	-1	+10	0
Mountain.....	+5	+5	-2	+2	-2
Pacific.....	+8	-4	+1	+4	+2
United States.....	+1	-7	0	+5	+1

Monthly Sales of Automotive Jobbers incl., Tire and Tube Wholesalers*

All Data Are in Millions of Dollars

Month	1961	1960	Per Cent Change
Jan.....	\$ 428	\$ 403	+9.36
Feb.....	401	415	-3.38
Mar.....	453	453	None
Apr.....	455	477	-4.61
May.....	477	494	-3.40
June.....	504	506	-0.79
July.....	462	448	+3.12
Aug.....	495	489	+1.23
Sept.....	456	453	+1.10
Oct.....	...	...	...
Nov.....	...	...	...
Dec.....	...	...	...
Total—12 Mos..	...	...	...
Total—9 Mos....	\$4,134	\$4,140	-0.15

* Estimated by the Bureau of Census

Monthly Sales of Franchised Car Dealers*

All Data Are in Millions of Dollars

Month	1961	1960	Per Cent Change
Jan.....	\$ 2,241	\$ 2,578	-13.07
Feb.....	2,154	2,670	-19.14
Mar.....	2,643	3,039	-12.87
Apr.....	2,494	3,119	-20.04
May.....	2,778	3,054	-9.10
June.....	2,781	3,015	-7.80
July.....	2,371	2,468	-3.93
Aug.....	2,343	2,616	-10.34
Sept.....	2,196	2,324	-7.23
Oct.....	...	2,688	...
Nov.....	...	2,633	...
Dec.....	...	2,437	...
Total—12 Mos..	...	\$32,701	...
Total—9 Mos....	\$21,964	\$24,883	-11.73

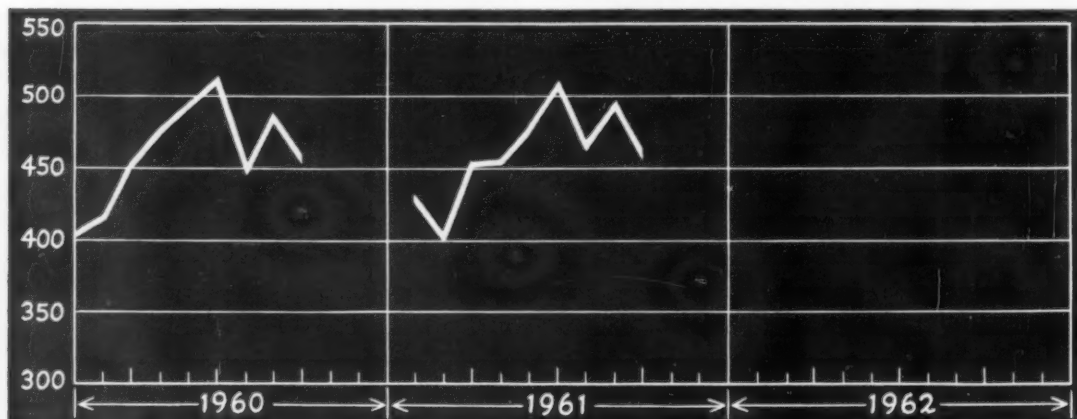
Monthly Sales of Gasoline Service Stations*

All Data Are in Millions of Dollars

Month	1961	1960	Per Cent Change
Jan.....	\$ 1,381	\$ 1,356	+1.84
Feb.....	1,282	1,285	-0.23
Mar.....	1,429	1,387	+3.03
Apr.....	1,439	1,487	-3.24
May.....	1,523	1,489	+2.28
June.....	1,568	1,524	+2.89
July.....	1,604	1,587	+1.07
Aug.....	1,616	1,568	+3.06
Sept.....	1,528	1,470	+3.94
Oct.....	...	1,505	...
Nov.....	...	1,455	...
Dec.....	...	1,511	...
Total—12 Mos..	...	\$17,594	...
Total—9 Mos....	\$13,370	\$13,123	+1.88

MONTHLY SALES OF AUTOMOTIVE WHOLESALERS— INCLUDING TIRE AND TUBE WHOLESALERS

(All Data in Millions of Dollars)



Quick Service Continued from page III

space, it soon became apparent that if he were to continue to maintain the orderly enterprise he advocated, he would have to go shopping for more spacious quarters. His machine shop was equally cramped also due to the increased volume of business. Thus it was decided to move Donaldson Sales from its original 18-foot by 55-foot building to a more practical home across the street.

In November, 1958, the firm opened the doors to the present fashionable cement block and steel quarters, built to owner Donaldson's specifications. The 60-foot wide, 115-foot deep structure is logically modern, fully fireproof, has ample parking in front for both the Donaldson fleet of trucks and for vehicles of customers and the parcel has adequate room for expansion in the rear, a move the president is already contemplating in the form of a 3,000 square foot warehouse.

A blue-stoned driveway runs along the side of the building permitting easy access for the largest of delivery trucks to the machine shop in the rear which

occupies about 2,000 square feet, or about one-third of the premises. By comparison, the machine shop in the original building was confined to a tight 300 square feet.

The machine shop is equipped with up-to-date tools of the trade and accounts for about 15 per cent of the yearly \$350,000 gross. As in the up-front merchandise departments, speedy service is the byword here.

"Many of our customers bring in their engine parts and wait for our machinists to do their job," Donaldson explains. "If it's an average operation, mic-up on crankshaft, drum turning, bearing pressing, we can usually deliver the finished product in less than a half hour, sometimes sooner." Present plans call for the purchase of a \$20,000 Van Norman crankshaft grinder.

About 50-75 rebuilt engines are always carried in stock at Donaldson's. Some are reconstructed on premises and some purchased from factories. Donaldson's growth has made it possible for the firm to become the Suffolk County, Long Island, sole

Continued on page VII



INDUSTRY MEETINGS

Dec. 7-14—Automotive Electric Assn. 44th Annual Meeting and Manufacturers-Distributors Conference, Edgewater Beach Hotel, Chicago, Ill.

Jan. 19-21, 1962—Ohio Automotive Wholesalers Assn. Booster Convention and Booth Show, The Neil House, Columbus, Ohio.

Feb. 28-Mar. 3—International Automotive Service Industries Show, Navy Pier, Chicago, Ill.

Mar. 22-25—Pacific Automotive Show, Memorial Coliseum, Portland, Ore.

Mar. 24—Automotive Wholesalers of Oklahoma Convention and Booth Conference, Municipal Auditorium, Zebra Room, Oklahoma City, Okla.

Mar. 28-31—The National Automotive Radiator Service Assn. Convention and Trade Show, Statler-Hilton Hotel, Los Angeles, Calif.

Apr. 11-13—Canadian Automotive Service Show, Automotive Building, Canadian National Exhibition grounds, Toronto, Canada.

Apr. 29-May 2—National Automotive Parts Assn. Spring Meeting, Boca Raton Hotel, Boca Raton, Fla.

May 11-17—Automotive Wholesalers Assn. of Tennessee 1962 Convention Cruise from Jacksonville, Fla. to Nassau and Haiti.

SEE ALL THAT'S NEW IN '62

FEBRUARY 28 - MARCH 1, 2, 3

NAVY PIER-CHICAGO

1962 I.A.S.I. SHOW

AUTOMOTIVE SERVICE INDUSTRIES

Motor Age Newsettes

A.S.I.A. Young Executives Forum Releases Directory

More than 300 wholesaler, manufacturer, warehouse distributor and rebuilder young executives are listed in a Membership Directory recently published by the YOUNG EXECUTIVES FORUM of the Automotive Service Industry Association.

Robert E. McNally, Chairman of the Forum's 1961 National

Committee, said, "The Directory will aid members in developing even closer contacts among fellow young executives—most of whom represent middle and top management within their companies."

* * *

New C.I.T. Plan Would Finance Garage and Station Equipment

Universal C.I.T. Credit Corporation has announced a new financing plan that will enable

garages, filling stations, and similar establishments to buy automotive equipment ranging from battery chargers to hydraulic lifts and pay up to 90 per cent of the cost in equal monthly installments.

The plan includes group credit life insurance as well as property damage insurance for the life of the time sales contract. Terms range up to 36 months, and a minimum downpayment of 10 per cent is required. Either new or used equipment may be financed.

* * *

Johnson New NLGI President

C. L. Johnson, President of Jesco Lubricants Company, Inc., was elected 29th president of the National Lubricating Grease Institute, at the group's annual meeting, held in Houston, Texas, recently.

Other newly-elected officers were: T. F. Shaffer, Shell Oil Company, vice president; W. A. Magie, Magie Brothers Oil Company, secretary; and A. J. Daniel, treasurer.

L. C. Brunstrum, senior research associate, American Oil, Whiting, Indiana, was appointed to his third term as chairman of NLGI's technical committee.

* * *

I.A.W.A. Elects Officers and Appoints Executive Secretary

The Indiana Automotive Wholesalers Association, Inc., held their election of officers and charter meeting October 22, 1961. Permanent officers and directors were elected for office through the 1962 term. One director was elected for each congressional district. Officers elected were: Robert A. Smith, Century Auto Parts Co., Indianapolis, President; and L. H. Wasmuth, Portland Motor Parts, Portland, Vice President.

George R. Perkins was chosen as full-time Executive Secretary.



Officers who will guide the Automotive Wholesalers of Texas during 1961-62 are, left to right, back row—G. C. Morris, executive director; Yancy M. Robertson, immediate past president; James Wilson, first vice president, and Joseph McLure, Secretary; front row—Poncho Oatman, treasurer; Wayne Bull, president, and O. D. Reed, second vice president.



The entire national sales force of the Columbus Parts Corp. will soon be driving cars identical to this one. James Balough, Sales Manager (left), inspecting the unit with Advertising Manager, Dick Zimmerman, stated that, "We have adopted this program to familiarize the public with our product."

NAW Booklet Shows Retailers Pitfalls Of "Buying Direct"

Say . . . Why DON'T WE "BUY DIRECT?," a booklet published by the National Association of Wholesalers presents graphically and concisely, the reasons why a retailer is money ahead when he does business with a wholesaler or distributor rather than trying to "buy direct." Booklets can be ordered from National Association of Wholesalers, 1001 Connecticut Ave., N.W., Washington 6, D.C.

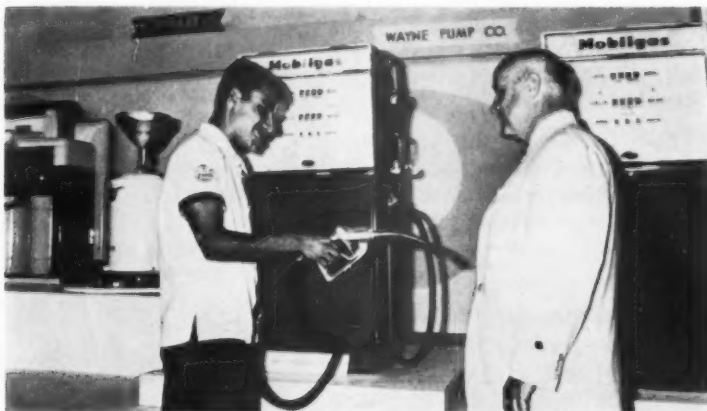
Perfect Circle Multiple Winner of Film Festival Awards

Perfect Circle Corporation was a multiple award winner in the ninth annual Columbus (Ohio) Film Festival, sponsored by the Film Council of Greater Columbus and the Area Chamber of Commerce.

Awarded Chris certificates in the field of information and education were PC's 16mm films "Case of the Slippery Oil" and "Auto, U.S.A."



The first full truckload of Continental Mufflers ever ordered from Walker Manufacturing Company leaves the factory in Racine, Wisconsin, for delivery to the Pennsylvania Rubber and Supply Company, Cleveland, Ohio.



Roy L. Morgan, right, Director of Field Services for the U.S. Department of Commerce, observes a demonstration of a gasoline pump at the recent International Fair in Izmir, Turkey. The pump, a model-440, was manufactured by the Wayne Pump Company, a division of Symington Wayne Corporation.

Quick Service . . .

Continued from page V

distributor of the Mohawk Chief package engine.

Plus business in the machine shop has come in the form of jobs from the ever increasing number of small industrial plants in the area, aircraft engine work from nearby MacArthur Airport and an avalanche of jobs from boatyards and mechanics catering to the nation's zooming pleasure boat industry. "Our inboard motor business has increased about 1,000 per cent in the past three-four years," Donaldson observes. "Certainly I'd recommend that other shops equipped like ours look to the boat industry for business."

What about up front in the new building? . . . How have the expanded facilities helped Donaldson Sales maintain and improve upon its traditionally prompt service?

The heavy gauge metal shelving at Donaldson's is seven feet high and each shelf is 12 inches deep. It is more than is needed, but makes stock readily accessible, easy to inventory and just as simple to keep clean. There are seven, 80-foot sections and floor space between bins is about three feet, three inches. This allows plenty of maneuverability for two regular counter men and one apprentice, each of whom can put his fingers on any item in practically seconds. Few shadows hide merchandise in the all-white interior of the building, thanks to the installation of 560 feet of running fluorescent lighting.

"Because of our roomy, well-catalogued setup," Donaldson stresses, "we estimate that our three counter men can do the work of an average staff of five!" A stickler for things spic and span, Donaldson adds, "Clean merchandise is probably 20-22 per cent more saleable than goods that are soiled. Our spoilage, incidentally, is less than one-and-a-half per cent."

Motor Age's

WHO'S WHO

Recent Appointments



J. J. Cody (photo)—to the newly created office of Jobber Sales Manager for Binks Manufacturing Company.

* * *

H. P. Cardon—as General Sales Manager for Kent-Moore Service Tool Division of Kent-Moore Organization, Inc.

* * *



Robert G. Hill (photo)—as Vice President of Sales of the Leece-Neville Company.

Edmond Malone—as Manager of the new Chemical Products Division of Circo Corporation, a subsidiary of Branson Instruments.

* * *

Edward Boltz—as Executive Vice President and General Manager of the Allen Electric & Equipment Company.

* * *



David A. Taylor (photo)—as Manager of Advertising and Sales Promotion for Walker Manufacturing Company.

* * *

Frederick A. Alden—as Purchasing Manager of the Black and Decker Manufacturing Company.

* * *

John H. Slemenda—as Sales Manager of the Hypressure Jenny Division of the Homestead Valve Manufacturing Company.

* * *

Alfred Botti—as head of the Flexible Cable Division of the C. M. Hall Lamp Company.



Lewis Davies (photo)—to the newly created position of Controller of Federal-Mogul Service, a division of Federal-Mogul-Bower Bearings, Inc.

* * *

Frank L. Brandt—as Vice President of the Lynn Division of Thomson Electric Welder Co., Inc.

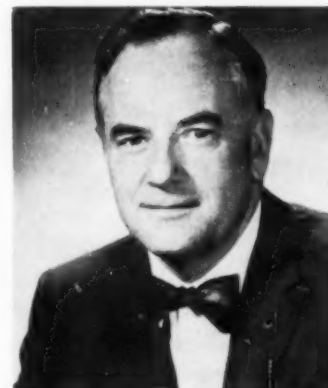
* * *

Urban H. Bauske—as Sales Manager, automotive replacement sales, for the Dayco Corporation, Rubber Products Division.

* * *

Robert McCallister—as Marketing Manager for the Automotive and Hardware Division of the Gates Rubber Company.

* * *



L. J. McGrady (photo)—as Director of Advertising for the Electric Autolite Company.

MOTOR AGE

N

ewscoop

*Car Registrations Rise
Mileage Allowance Up
Used Cars Selling
44th Natl Auto Show*

*Auto Prices Stabilized
Ford 'Cardinal' Delayed
Shorter Tax Forms*

In the days ahead HERE'S WHAT TO LOOK FOR !!!

(Items gathered and edited by Ed Janicki, Bill Montgomery and Neil Regeimbal)

Motor Vehicle Registrations Rise

NO LETUP IS IN SIGHT IN CONTINUED expansion of number of vehicles or their use, government experts say.... U.S. Bureau of Public Roads says total motor vehicle registrations will soar well over 76 million this year, topping last year by almost 9 per cent.

At same time, Bureau expects motor fuel consumption to hit almost 65 billion gallons, a gain of 2.6 per cent.... Of this, 59.4 billion gallons will be for highway use—56.7 billion gallons of gasoline and 2.7 billion gallons of special fuels, such as diesel and butane.... This averages 781 gallons per vehicle.

Cars Of The Future May Be Adhesive Bonded

THE AUTOMOBILE OF THE FUTURE may be glued together—like a piece of furniture.... Some body engineers predict that new developments in fiber-glass, reinforced plastics and honeycomb sandwich panels may hasten the day of an all-adhesive bonded car.

They point out, however, that a completely bonded "all-steel" production car body is unlikely since welding is still best method.... But welding, brazing, bolting, riveting and soldering could be replaced by adhesives in areas where there are dissimilar materials—such as glass to metal, plastics to metal and the like.

Chevrolet Well Ahead In '61 Sales Race

IT APPEARS THAT CHEVROLET once again will win new-car sales derby.... Registration figures through September (latest available) show Chevrolet ahead of Ford by some 235,000 units.... This substantial margin virtually assures victory for 1961.

Since end of war, Ford has grabbed sales title only twice—in 1959 and 1957—but by a very thin margin.... Chevrolet held sales crown for eleven consecutive postwar years until Ford took it away in 1957.... Since then, it has been a see-saw battle.

Neil Regeimbal's Washington Almanac

The seeds of strong economic recovery are sprouting. By the first of the year, all business signs should be strong, government economists say. Here are



Neil Regeimbal
MOTOR AGE's News
Editor, Wash., D.C.

some recent indicators: Gross National Product (total of all goods and services produced) has risen some 5 per cent since last spring; personal income is up by \$17 billion in annual rate from last winter and now totals \$420 billion, and employment is up by 1.5 million to 54 million, excluding farm workers.

* * *

Prices are continuing to rise, robbing consumers of some of their purchasing power. The Labor Department reports the Consumer Price Index (CPI) hit a new high in September, climbing to 128.3.

* * *

President Kennedy's 1962 (fiscal year) budget contains a lot of red ink, as suspected. The White House admits the government will add nearly \$7 billion to the already-huge national debt. It may run even higher, closer to \$9 billion, despite the President's order to federal agencies to cut back spending and postpone all possible projects.

Protecting Factory To Wholesaler Discounts

CONGRESS NEXT YEAR MAY APPROVE a law requiring manufacturers to make so-called functional discounts to wholesalers.... Federal Trade Commission now may be ready to back such a law—this could win a lot of support for bill in Congress.... Law would allow jobbers to buy from factories at lower prices than direct-buying chains and discount stores.

"Do-It-Yourself" Business Forecast Available

COMMERCE DEPARTMENT LAUNCHED a new monthly report which puts between covers enough business data to supposedly allow businessmen to "make a good forecast" of short-run economic trends.... Titled "Business Cycle Developments," it costs \$4.00 a year.... Book merely brings together a batch of government statistics already available though sometimes hard to find.... There are no conclusions or forecasts included.

Government Ups Mileage Allowance

FEDERAL GOVERNMENT HAS FINALLY realized that it costs more to drive a car than it used to.... Government has increased mileage allowance for its employees who use their own cars to 12 cents a mile from 10 cents.... This gives private drivers who use their cars for business a break too.... Government will permit tax deductions of 125 per cent of government allowance, so new deduction is 15 cents a mile rather than 12½ cents.

AEC Says Lock Illuminators Not Dangerous

"ATOMIC" CAR LOCK ILLUMINATORS are no longer subject to U.S. Atomic Energy Commission licensing.... Devices use tritium, a radioactive element which is generally subject to AEC control.... But AEC says small amounts used as a paint in lock illuminators is too small to produce external radiation, is not dangerous, and thus does not need to be licensed.

Mickle Named To Public Roads Post

D. GRANT MICKLE, FORMER DIRECTOR of Automotive Safety Foundation's traffic engineering division, is new Deputy Federal Highway Administrator for Bureau of Public Roads.... Post is a new one, created when former job of Commissioner of Public Roads was abolished.

Ford To Announce "Rotunda" Parts Line

UNDER A NEW PROGRAM, FORD WILL MARKET replacement parts for most competitive makes.... Parts which will be offered by FoMoCo under brand name "Rotunda," cover about 90 per cent of the market.

To improve their merchandising appeal, Rotunda packages will carry, along with name of part (1) a simple merchandising number along with Ford parts number for easy identification (2) a list of competitive makes of cars and model years on which the part can be used.

Used Car Sales Holding Strong

USED CAR SALES HAVE BEEN HOLDING up unusually strong during past two or three months.... In past, used cars sales tended to take a dip around new-car announcement time and weeks following debut.

However, situation has reversed itself this year.... Many dealers are begging for clean late model cars.... Prices of such units are holding up firmly compared with last year.... Stocks are well below a 30-day supply, and a great many dealers are reporting high gross on used units.... One company notes that 1961 used models depreciated much less than their 1960 counterparts.

Detroit Plans The 44th National Auto Show

PLANS ARE NOW STARTING TO JELL for 44th National Automobile Show, to be held again at Detroit's sumptuous Cobo Hall, Oct. 20-28, 1962.... AMA's show committee recently held its first meeting to hash out ideas for what one member described as a "super" show.... AMA undoubtedly will have a tough time trying to top last year's extravaganza, which was highlighted by appearance of former President Eisenhower.

'62 Auto Prices Average Same as '61

PRICES ON 1962 AUTOMOBILES went every which way.... Some went up, some went down, and others remained almost unchanged.... If you analyze them, however, tags remain about same, on the average, as those on the 1961 models.... This marks third year that auto makers have held price line despite new concessions to UAW.

While some upward price revisions were made on standard cars due to addition of heaters as standard equipment, most 1962 compacts carry lower prices.

Ed Janicki's Dealer News

Dealers are spending more on new facilities than ever before in history . . . in an attempt to win back some business from the independents and service sta-



Edward Janicki
MOTOR AGE's News
Editor, Detroit

tions . . . Matthew S. McLaughlin, Ford Division general sales manager, notes that Ford dealers had invested more than \$800 million in equipment at the start of 1961; they'll be investing another \$31 million this year to expand and improve customer service.

A typical example: one Ford dealer recently opened a plush new \$500,000 location on a 27-acre site in a metropolitan area. In addition to the latest repair equipment and "quick-service" stalls, the setup includes a test track on which customers can try out cars and a used car "terrace" so laid out that customers can drive and shop from their own cars.

* * *

Dealers may have to be a little careful in granting credit. Federal court officials warn that the number of personal bankruptcies is increasing "at an alarming rate." Some 131,402 nonbusiness bankruptcies were filed in the 12 months ended last June 30, some 34.4 per cent more than in 1960 and the fifth rise in as many years.

'62 Economy Run To Be Longest Ever

WORLD'S LARGEST STOCK CAR COMPETITION, the annual Mobil Oil Economy Run, seems to be getting bigger each year.... Next year's run, scheduled for March 31-April 5, will cover a route more than 2000 miles long.... It will start in Los Angeles and terminate in Detroit, the longest stretch in the history of the run (Chicago was the finishing point last year).

As usual, exact route is being kept a secret—to prevent competition from practicing the course.... Winners in seven classes will be judged on basis of actual miles per gallon.... Manufacturers, dealers, dealer associations and private individuals may enter economy run, which will be supervised by United States Auto Club.

Ford Delays "Cardinal" Introduction

FORD ENGINEERS ARE WORKING FEVERISHLY around clock these days.... 1963 standard Ford is all buttoned up now.... But engineering changes are still coming through on a car scheduled to make its maiden appearance sometime next year—a little "doodlebug" called the Cardinal.

Cardinal, a Volkswagen challenger, is undergoing final tests and changes at Ford's Romeo, Mich., proving grounds.... Originally scheduled for mid-1962 introduction, sub-compact Cardinal has been delayed 90 days... This means it'll probably bow about the same time as standard 1963 cars—toward end of year.

Informed sources say 95-inch wheelbase Cardinal will come out in two versions, one for U.S. market and another, carrying a slightly smaller engine, for European market.

Government May Set Auto Safety Standards—If States Don't

THREAT OF FEDERAL AUTOMOBILE SAFETY standards is still strong.... Rep. Kenneth A. Roberts, D., Ala., one of the chief backers of car safety laws in Congress, still says that there will be federal laws to regulate car safety standards, smog control, and driver licensing unless the states stop "dragging their feet." He charges that states have failed to protect consumers against defective vehicles and parts.

In rebuttal, John F. Gordon, President of General Motors Corp., contends that self-styled safety experts and "amateur engineers" are trying to impose federal regulation of car design on the industry in an "unrealistic" approach to traffic safety.... He asks professional safety experts to "resist the siren call of alleged panaceas."

Long Form Now Shorter—And Easier To Check

INTERNAL REVENUE SERVICE HAS news for individual taxpayers.... Form 1040, the so-called "long form" has been shortened by two pages, to only two pages instead of four.... Also, taxpayers who have no Social Security number to use on their forms will, be assigned numbers by the Internal Revenue Service.... Numbers won't be required on forms until 1963.

Meanwhile, if you file a return with no Social Security number, tax collectors will write back to you asking for either your Social Security number or a request from you for a "tax account number".... This is part of the Service's new program of using electronic computers to check every tax return, rather than just picking returns at random to audit.

FOR THE RECORD



Wisconsin Enacts Safety Belt Law

Wisconsin became the first state in the nation to require safety belts on the front seats of all new cars sold in the state starting with the 1962 models.

Nation-wide, it is estimated that over two million automobiles are equipped with seat belts for passenger safety, according to a poll conducted by the Auto Industries Highway Safety Committee.

All 1962 model cars are equipped with seat belt anchorages.

* * *

Beware of Fall-Out Shelter Racketeers

Better Business Bureaus across the country, as well as

various Government agencies, are issuing warnings for the public to beware of fly-by-night operators selling shelters and self-protection gadgets.

The Association of Better Business Bureaus has appointed committee to review and coordinate various shelter and equipment advertising and selling standards. The Federal Trade Commission is planning to issue advertising guides for sellers of fall-out shelters, survival kits, and related equipment.

Bureaus are warning the public not to be panicked into making hasty decisions and to check their local BBBs for a "reliability report" on any contractor and equipment dealer with whom they are interested in doing business.

NADA Takes Stand On Factory-Dealer Relations

In a statement issued recently, commenting on the action of the Federal Grand Jury in Los Angeles, Thomas F. Abbott, Jr., President of the National Automobile Dealers Association said, "If the intent of the government is to challenge the right of the manufacturer to independently exercise reasonable controls over the orderly distribution and proper servicing of its products in the interest of public safety and the economic welfare of the buyer, then NADA and the dealers of America express deep concern for the future of the industry and the preservation of the franchise system."

Continued on next page

James E. Goodman, a member of General Motor's executive committee, was recently elected an executive vice-president of the corporation with jurisdiction over the automotive, body and assembly parts divisions. Edward N. Cole a G.M. vice president was elected a director and appointed group executive in charge of car and truck divisions group. He was also made a member of the executive committee. Semon E. Knudsen, also a G.M. vice president, was appointed as general manager of the Chevrolet Motor Division. Elliott M. Estes was elected a vice president of General Motors and appointed as general manager of Pontiac Motor Division.

.. Goodman..



.. Cole..



.. Knudsen..



.. Estes..



For the Record . . .

Continued from page 37

"NADA's Governmental Relations Committee and the Task Force Committee with the unanimous endorsement of the Association's Board of Directors, will follow the developments closely to determine the full import of this litigation on the franchise system and will, in the light of developments, recommend proper remedial action."

* * *

National Safety Council Forms School Bus Unit

A new unit of the National Safety Council devoted exclusively to the prevention of school bus accidents was established by the Board of Directors of the Council during the 49th National Safety Congress held recently in Chicago.

The new School Transportation Section of the Motor Transport Conference grew out of work done in 1955 by a school bus advisory committee. The new section seeks to promote better techniques of driver selection, training and supervision, vehicle maintenance and route selection for school buses.

* * *

South American Motors?

American Motors Corporation has announced that the Argentine Government has granted approval of an agreement providing for the manufacture there of Rambler Automobiles by Industrias Kaiser Argentina.

Production fixtures and machines shipped from American Motors' Kenosha, Wisconsin, facilities, presently are being installed at the Cordoba, Argentina, plant. The first Rambler will roll from I.K.A.'s Cordoba assembly lines in January.

Prestolite Plans World-Wide Alternator Production

World-wide production of Prestolite automotive alternators is scheduled for the first quarter of 1962, according to J. J. Bohmrich, International Operations Vice President of the Electric Autolite Company.

Already in production in the United States, the Prestolite alternator will also initially be manufactured in Argentina, Brazil, Canada, Mexico, and France.

**A Very Merry
Christmas
and a
Prosperous
New Year
To All**

With the "sneak previews" all behind us, there is really no excuse for printing this picture, except as a reminder that this is an excellent reason not to miss the next one.



REPORT to our READERS



Readers are Writers

MORE than six thousand quizzes have been returned by Motor Age readers who are taking part in our Training Program. Comments have been plentiful and greatly appreciated.

Carl L. Roehl, owner Bee Line Frame and Alignment of Appleton, Wis. writes "I would suggest that you move the 'cut out page along this line' over a half inch so that it is easier to remove page from magazine." This has been done, sir, and many thanks for the prompting.

To Mrs. Alicia A. Schaefer of San Antonio, Texas, our apologies. Inadvertently we addressed her as "Mr." "I am not Mr. Schaefer," she writes. "I am twenty-four years old and the mother of 4½ children. I enjoy your course so much, I'd like to show my husband that I (a woman) can pass it." Mrs. Schaefer passed with flying colors. Her grade 100.

Forty Years of Satisfaction

Chase A. "Art" Fox, Fox Garage, Cedar Rapids, Iowa, and first vice-president of Independent Garage Owners of America, nutshelled his business experience as follows: "I have enjoyed my more than forty years in auto repair. If you like machinery . . . are not afraid of work or dirt . . . enjoy making a motor talk to you . . . a rear end remains quiet at all times . . . like people enough to take a lot of guff . . . then and only then are you equipped to be an auto mechanic. All of these qualities I do not have but at least I lasted forty years at a profit!"

There is satisfaction in his words and they should serve as guidelines for younger men coming up in this business.

Send that Safe Holiday Letter

For the third successive year, the Auto Industries Highway Safety Committee is recommending a "Holiday Safe Driving Letter" to be sent to your customers. Basically it's a reminder to all car drivers to plan a Safe Driving Holiday.

The letter concluded, "Full enjoyment of the Holiday Season is something to which all of us look forward. With this enjoyment however,—and we know you agree—goes individual responsibility to protect your family, yourself, and your community. Let's all drive for a Safe Holiday."

For the full text of the letter, write M. R. Darlington, Jr., Auto Industries Highway Safety Committee, Inc., 2000 K St., N.W., Washington, D.C. (Tell him Motor Age sent you.)

They Love You in December

There is no class of merchants who strive so hard and under such adverse conditions to serve the public than automotive servicemen. This is particularly true in the winter.

Whether it's hard starting, tire chain installation, or hip deep snow, most owners heave a sigh of relief when your service truck pulls up beside them.

Faithfully yours,

Frank P. Tighe



Editors Note:

TALL, energetic and forthright Sherwood Harry Egbert is 41 years of age and the youngest top executive among car makers. He became president and chief executive officer of Studebaker-Packard Corporation in February of this year.

In that brief period things have started humming at the 110-year-old South Bend manufacturing plant. Corporate relations, employee relations and dealer relations have been rolled into one package of optimism.

Objective: INCREASED

An exclusive interview

Q.—Do you feel that Studebaker-Packard will earn an increased share of the 1962 market with its new models?

A.—We are proud and enthusiastic about our 1962 products, the Lark and the Hawk. Our objectives in sharing the market is to make ours a profitable dealer organization. We'd like to double the sales and earnings potential for our dealers. And, we believe we've got the team that can do it.

Q.—A team? Do you mean a dealer organization?

A.—We mean more than that. We believe that profit-making dealers are the front line of management. We want a strong infield (factory organization) and a mighty good outfield (our dealers). With such a team we aim to achieve public acceptance and a favorable company image.

Q.—In a year which saw heavy dealer mortality

in all lines, how did Studebaker-Packard fare?

A.—Throughout the year, we have attempted to upgrade our dealer organization by seeking exclusive franchises wherever possible of dealers on "First Street" rather than on "Third Street," so to speak. Since August 31, or with the introduction of our restyled and lengthened 1962 models, we have added 112 new dealers and terminated 76. But, we repeat, we are not in the numbers game. It is not the number of dealers, but the potential of those dealers. For instance, the new franchises signed have already ordered more than double the number of units the terminating franchises sold all last year. Their potential is even greater. We are building steadily and are winning dealer loyalty.

Q.—A number of Studebaker-Packard outlets were "duals" with one of the "Big Three." Do you expect this trend to continue?

A.—There are presently some 2100 Studebaker-

A World War II Marine Corps major, he served as engineering officer for the Marine Air Transport Service which operated a 26,000-mile combat and service air route throughout the South Pacific and Far East.

Later he was assigned to the Navy Department, Bureau of Aeronautics, Power Plan Division, which was responsible for the development of turbojet and ramjet engines.

Mr. Egbert joined McCulloch Corp., Los Angeles, Calif., in 1946 as assistant production manager for the world-wide

manufacturer of powered chain saws and industrial engines. In 1951 he was appointed vice-president of manufacturing and director of the corporation. In 1956, when McCulloch purchased Scott-Atwater Manufacturing Co., a leading manufacturer of outboard motors, Mr. Egbert was appointed chairman of the Scott board of directors, executive vice-president of McCulloch and a member of its executive committee. He was also vice-president and director of several McCulloch divisions in Belgium, Australia and Canada.

DEALER POTENTIAL

with Studebaker-Packard President, Sherwood H. Egbert

Mr. Sherwood H. Egbert expresses his views to MOTOR AGE Editor Frank P. Tighe.



Packard dealers, and of these about 450 duals. Where in the past duals accounted for more than 20 per cent of our volume, they only account for nine per cent at present, as we continue to close open points in what we have designated as our "100 key markets."

Q.—Studebaker-Packard has recently opened some factory-operated deals in several major markets, presumably for lack of adequate dealer representation. Is this a permanent program or merely a temporary expedient?

A.—We don't want to be in the retail business and as soon as we can find the right distribution at these points (in major metropolitan areas) we'll be happy to appoint dealers in place of our own outlets. We are ready to sell any factory retail outlet any time to any qualified dealer. We will help him with his financing, too.

Continued on page 109



"We are proud and enthusiastic about our 1962 products, the Lark and the Hawk. . . . We'd like to double the sales and earning potential of our dealers."

Studebaker Revisited



THE occasion of the foregoing interview with Sherwood H. Egbert brought to mind the years this writer spent at Studebaker as public relation man.

They were the days when Paul G. Hoffman was at the helm. With Harold Vance, Roy Cole, chief engineer, George Keller, sales, Scotty Fletcher, Dick Hudson, Paul Davis, Gene Noon, Karl Silvy, Fred Watson, Charlie Center and tall Harold Osborn teaming together. A great and good friend, Minor Williamson, represented the advertising agency.

It was Paul Hoffman's statement, "Nobody has a corner on brains," which, to this day, exemplifies the spirit of competition in the Studebaker organization.

Out at the other end of town, the golden dome

of Notre Dame glistens in the skies. Knute Rockne was gone and the football forces under Elmer Layden were having a tough time of it.

Beyond Notre Dame and into the Indiana countryside we worked on publicity pictures showing the contrast between the "modern" 1938 automobile and the old horse-drawn sleigh. This was taken in a blinding snow storm (see illustration). As cold as it was, warm and fond memories remain.

The day after our visit with Mr. Egbert, Southern Cal played Notre Dame. This writer's son is a freshman at Notre Dame. Mr. Egbert's son is a freshman at Southern California. We both agreed that we should do something about the 1961 contest. Mr. Egbert is such a good sport.

F. P. T.



Checker Marathon Station Wagon offers an exceptionally wide tail-gate floor opening making the loading of bulky cargo a simple matter.

Checker Marathon 4-door sedan's durability and economy of operation has been proven in many thousands of miles of tough taxi-cab operation.



CHECKER...

The Family Man's Limousine

Kalamazoo-made and Taxi-Proven, this rugged car can handle a variety of jobs—well

By H. David Leslie, Jr., Managing Editor

ALTHOUGH the Checker Manufacturing Company and its dealers do not limit their prospect lists to large families with active children, the cars that roll off the assembly lines in Kalamazoo are, more and more, finding their way into the garages of this type of owner. This, of course, is no accident, because a big percentage of the company's advertising is designed to achieve this end. However, any Checker salesman can give you some pretty sensible reasons why the car is just as desirable to a Salesman, Florist,

Funeral Director, Farmer, Rancher, Religious Institution, and many more.

Checker's avowed intent is not to out-dazzle Detroit's competitive "bucket-seat" brigade, but to produce an automobile that combines quality, utility, and durability with economy of operation. And the feeling of the people at Checker is that they have been doing just that—since 1921.

Although Checker has been manufacturing automobiles for 40 years, they are a fairly recent entrant into the passenger car retail market. This move was virtually forced upon them, when, in 1957, the advent of the 14 inch wheel caused a general reduction in interior roominess and a certain amount of muttering throughout the land. Until that time, they manufactured only one product—the taxicab.

Today, by the simple expedient of removing the meter, they are in the passenger car business. Actually, the transition was not quite that simple, but the basic car remains, and to this they have added a four-door station wagon.

Continued on page 107

Now that Detroit has gotten its '62 Models off and running, MOTOR AGE would like to offer you . . .

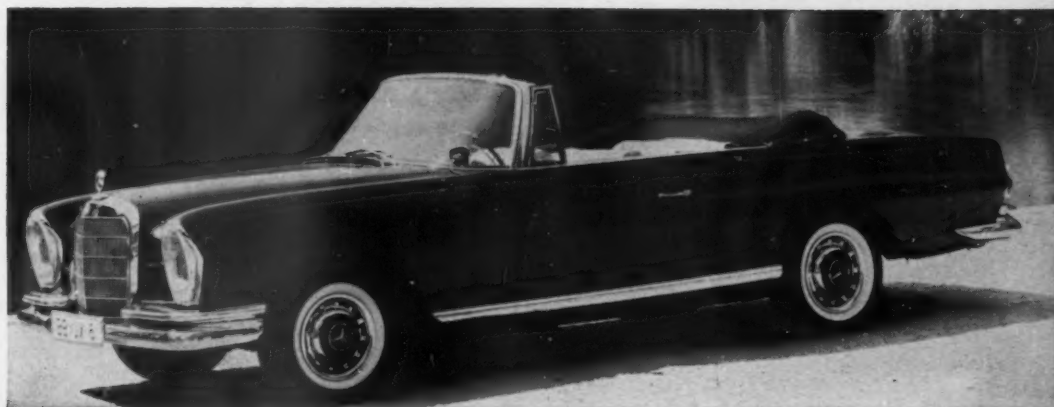
A Look at the INTERNATIONAL SET



Volvo's new P-1800 Sports Coupe
—one of the European leaders in
styling and engineering.



The German-built Porsche Sports
Touring car boasts such safety fea-
tures as wrap-around bumpers and
recessed steering wheel.



The Mercedes-Benz 220 SE Cabriolet combines the advantages of a sport-styled vehicle with the comfort of a touring car.



Among the many safety features of the Mercedes-Benz are these disc-type brakes on the front wheels of the 220 SE Cabriolet.

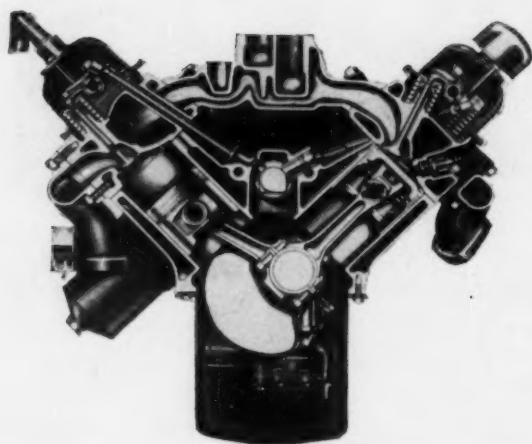
The first 1962 British Economy Car for the U.S.—the Hillman 1600—features a larger engine and improved front and rear suspension.



Another British entry—the Sunbeam Alpine—is a sports car plus, with wrap-around windshield, wind-up windows, and a large luggage compartment.



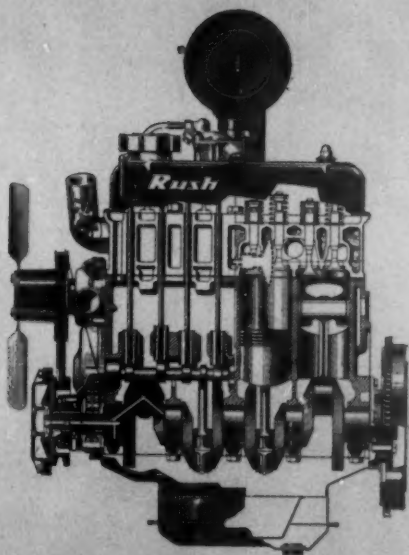
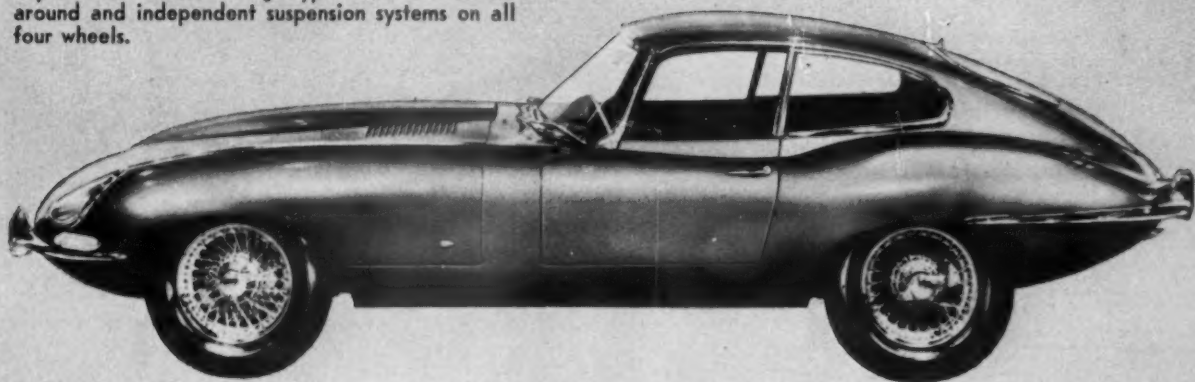
Lively acceleration, rugged performance and clean styling mark the new Austin-Healey "Sprite" sports car. Top speed is well up in the eighties with gas mileage averaging 35 miles to the gallon.



Chrysler of Canada manufactures the V-8 engine (right) which powers the Bristol 407 five-point-two. The transmission is the Chrysler-designed Torqueflite with the three-speed, push-button control. Although the power plant is two and one half times greater in capacity than the earlier Bristols, it remains a comparatively economical car.

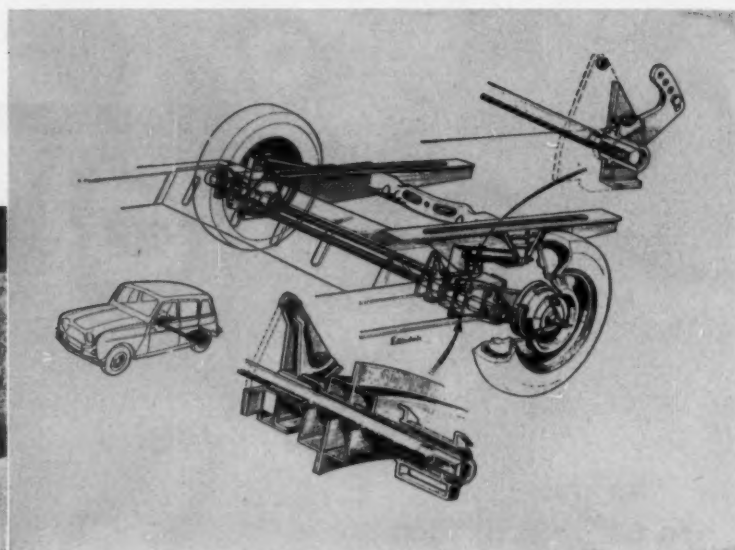
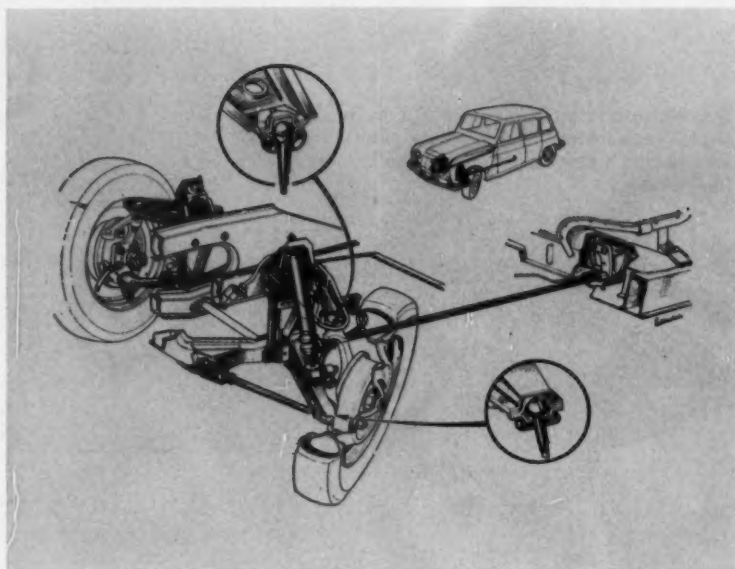


The high-performance Jaguar XK-E Coupe boasts triple carburetors, bridge-type disc brakes all around and independent suspension systems on all four wheels.



A 5-main-bearing crankshaft and a new centrifugal oil filter mounted on the end of the crankshaft are features of the new Rush Super 4-cylinder engine (left) which powers the 1962 Simca '5' economy sedans. The Simca '5' now develops 65 hp.—30 per cent more than in previous models.

Simplicity with comfort best describes Renault's new 4L, a front-wheel-drive economy car designed for every day use. The R4L offers complete front and rear torsion bar suspension and a permanently sealed cooling system. Hydraulic telescopic shocks assure a smooth ride on and off the highway.



The 1962 Volkswagen Sedan closely resembles all its predecessors, yet incorporates almost 1000 improvements made over the last fifteen years.

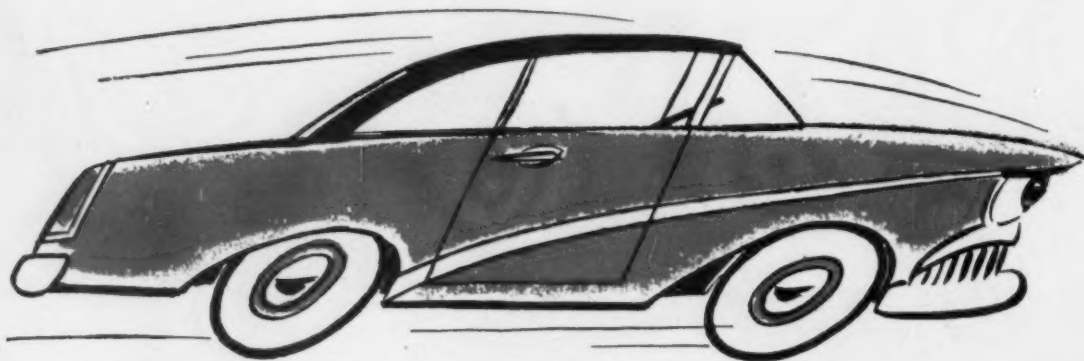


The Aston Martin DB4 is a 2-door 4-seater sports saloon. The 3.7 litre engine is a twin overhead-cam 6 cylinder with dual S.U. carburetors.



The Bentley "S" Sedan exemplifies automotive transportation in its most elegant form. This model is identical to the Rolls-Royce "Silver Cloud" Sedan.





WHO'S RUNNING SCARED

Promote Lift Services—the “get out and get under” practice of inspecting and servicing the underside of a car or a truck is as dead as a sick battery

LAST month, we explored a number of things that must be done even though the “fittingless” car offers utopian promises of service free life. Let's continue with the questions!

Question: *Is the lubeless car completely service free?*

Major oil companies and others have determined that there are 20 to 30 points that still require attention, service inspection or lubrication at frequent intervals.

For example, here are points that should be checked every month:

- Air Cleaner—wash or clean element.
- Battery—test and fill; inspect cables.
- Brakes—add fluid if low, adjust if required.
- Cooling System—check radiator, belts, cap,

- hoses, clamps, and thermostats.
- Crankcase—change oil, wash fill cap.
- Differential—add lubricant if low.
- Horns and Mirror—check condition.
- Lights—check *all* lights.
- Muffler and Tailpipe—check for leaks.
- Power Steering—add fluid if low, check leakage.
- Shock Absorbers—check action, leakage, inspect bushings, replace if necessary.
- Steering and Suspension—check for tightness, seals.
- Tires—inspect for wear, cuts, bruises, inflate to proper pressure.
- Transmission (Manual or Automatic)—add lubricant if low.
- Universal Joints—lubricate (if required) check for tightness.



OF 'LIFTLESS' CARS?

Windshield Service—wipers, washers, motors.

Everyone—most especially the manufacturers of fittingless automobiles—are careful to state precisely the advantages and limitations of the fittinglessness. But the danger here is confusion in the minds of the vast motoring public that once such an automobile is purchased it will never again have to darken the door of a service bay.

The matter of oil change is another area of confusion:

Question: *How often should oil be changed?*

In the minds of the motoring public right now, this whole matter of the correct oil change period is about as well organized as a Chinese fireboat drill.

Every car seems to carry a different recommended oil change period and, even within a single make, various models have different change periods.

All car manufacturers, however, seem to agree that it depends on the type of driving and the weather conditions more than anything else. The American Petroleum Institute has brought out this fairly standard recommendation—that oil should be changed every

60 days in summer, every 30 days in winter and never to be run over 2,000 miles.

However, the danger here again creeping into the minds of the motoring public is that grease jobs and oil changes go hand in hand like apple pie and cheese. If the car owner becomes confused that his automobile never has to see the inside of a service station for a grease job, it seems safe to assume that before long, his oil change periods will become more and more extended.

Question: *Won't the 12-month, 12,000 mile warranties send more service business to the car dealer and hurt the service station?*

Here's another development of the 1961 selling season which is having—and will have—far-reaching influence on the aftermarket and on the lubrication business.

At first blush, anyone in the service station business might view the whole matter with alarm, thinking that car dealers would inevitably pull back the customer for any and all of his needs, somewhat like socialized medicine. But it ain't all beer and skittles for the dealers when you stop to think of some of their problems.

Continued on page 96

Whether you plan to build a new dealership, or service shop or fix-up your present facilities, the study of building plans and tool and equipment layouts in this Good Shopkeeping issue will be of invaluable help in making your business a success

GOOD SHOPKEEPING 0000

By William M. Montgomery, News Editor

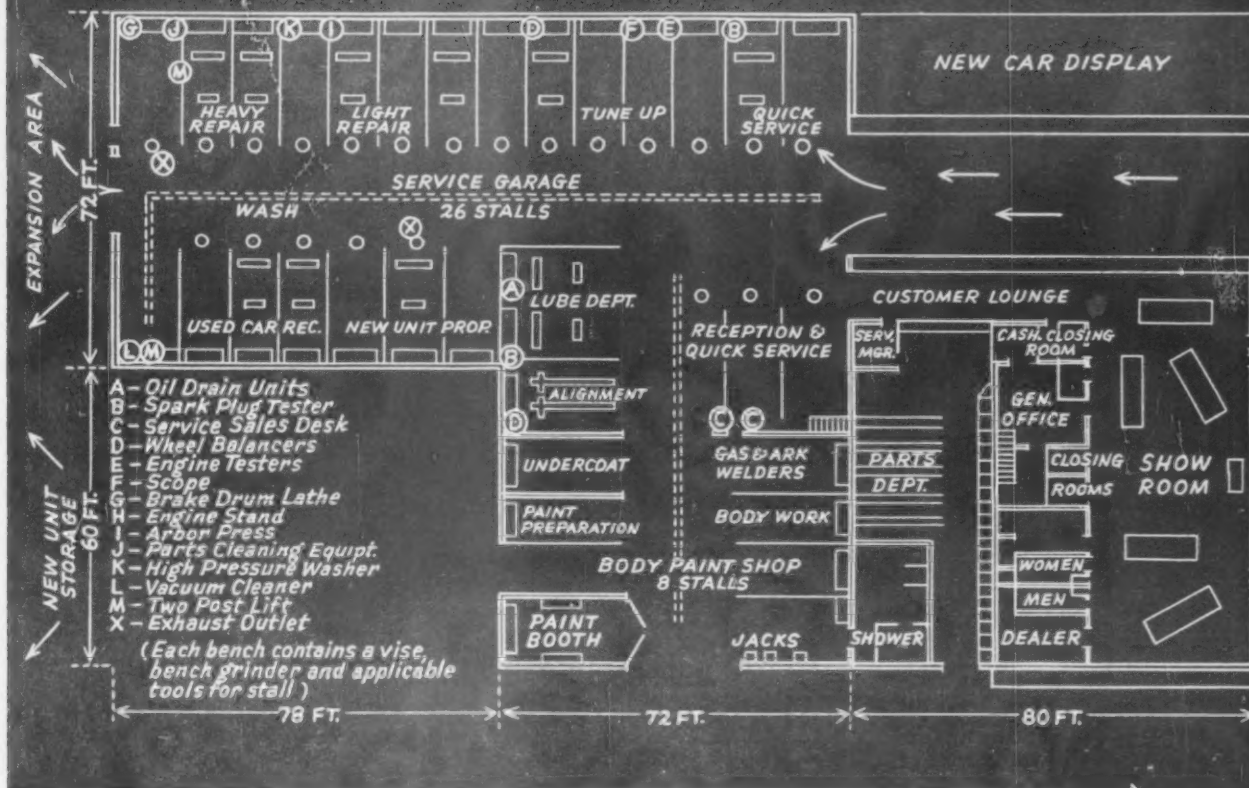


GOOD Shopkeeping is the best merchandising tool that a dealership, repair shop or service station has with which to impress the customer. Good Shopkeeping practices make these establishments inviting. Modern, clean, well equipped buildings and service departments encourage the motoring public to drive in with confidence for car servicing.

Unfortunately, some shops and dealerships have allowed their establishments to slide into cluttered, ill-planned and badly equipped departments. The outward appearance of dis-

This dealership's high 50 × 106 × 14-ft. showroom forms an imposing picture. The building features a canopy at one side constructed of steel panels. Below is shown the heavy and light service center which has six separate drive-through openings. (Armco Steel Building)





Main floor plan of a dealership, including basic tools and shop equipment is shown above. The service garage can handle 26 cars. Reception and quick service area are situated just inside the service entrance.

order and confusion and the lack of up-to-date tools and equipment turn customers away. They want to patronize an establishment that looks clean and well equipped. Now is the time to look your establishment over. How does it measure up in appearance, service and location?

Location Important

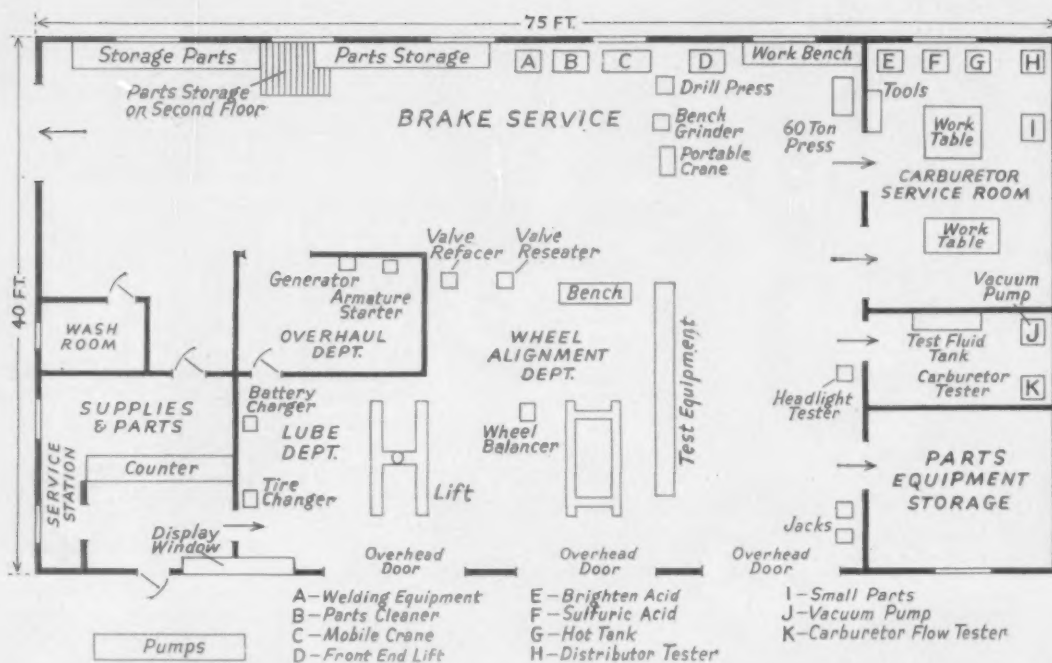
Location of your shop is very important. If your building is in a good location perhaps you are ready to improve and expand its facilities. Sometimes to get the kind of service

department you need it might be less expensive in the long run to rebuild from the ground up. This means that you now have a chance to make your building one of the most up-to-date and modern type repair shop or dealership in your area.

There is a tremendous investment being made by many dealers in expanding and rebuilding their dealerships. They find that they must keep up with the changing market and the change in the needs of the customer. Here are a few examples of what some car dealers have done to meet and stay abreast of

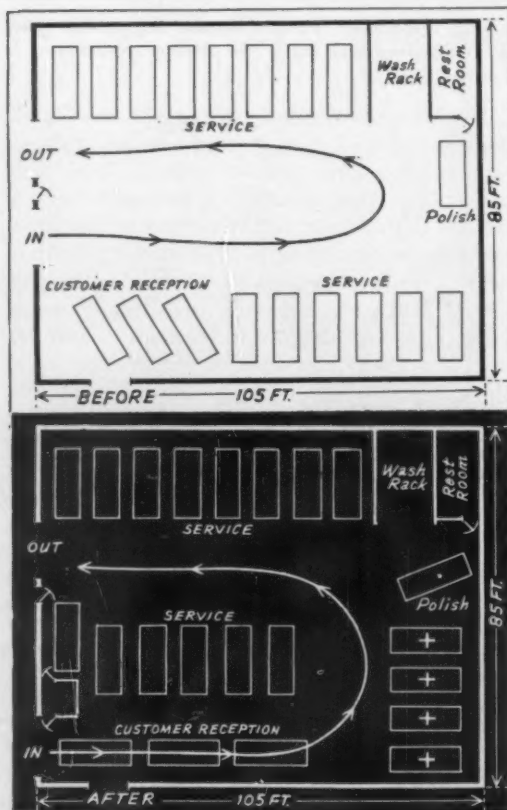
There's lots of room to maneuver cars in this clear span building. It provides an expansive, column-free interior for the service department. Also good ventilation results from high 19-ft. wide walls and a power exhaust system. (Butler Steel Building)





Layout of combination service station and repair shop is shown above. This shop specializes in electrical and carburetor service. It also rebuilds motors and transmissions. Building is of brick and stone construction.

Diagrams at left show how a service department can be remodeled to hold four additional cars, by relocating the entrance and establishing a customer reception area in a space between the side wall and new low dividing wall.



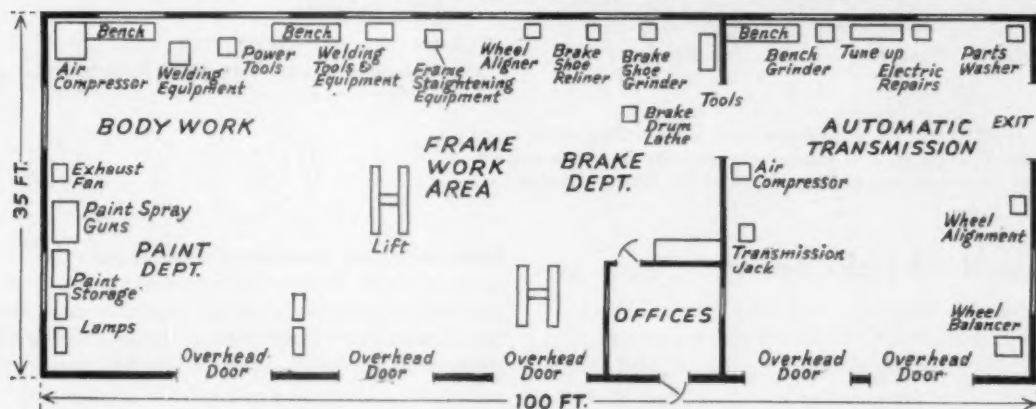
Good Shopkeeping . . . Continued

the changing times in car selling and service.

For example, a dealer located in the West moved into a new \$500,000 location. It included a \$200,000 building located on 27 acres in a metropolitan area. The dealership boasts a half-mile test track for customers to try out their new and used cars. It also has a display area where fifty new cars are kept ready for sale and a used car terrace laid out so that customers can drive and shop from their own cars.

Another dealer in a town of about 40,000 moved into a new facility which cost well over \$250,000. It was located on the area's most heavily-traveled highway, yet was con-

At right is view of service center showing pump islands with new modern lighting fixtures. The four overhead doors and open area in front makes entry into stalls easy from the driveway.



The floor plan and tool arrangement of an independent shop is shown above. This shop has five overhead doors and does body work, regular repair work and tune-ups.

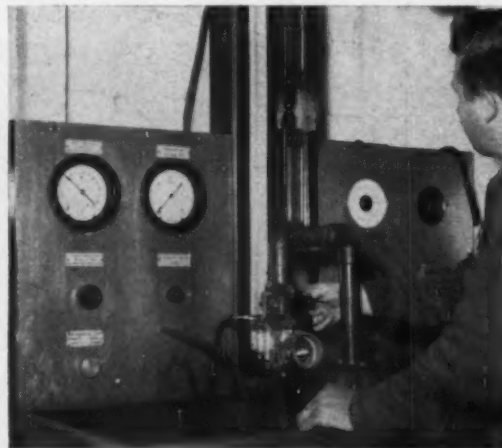
venient to city and suburban traffic. This dealership has the latest and most efficient repair equipment in its 43 work stalls.

A Dayton, Ohio, dealership was designed for "maximum efficiency of operation." The new \$550,000 building is surrounded by an area in which a population explosion is occurring. Also, leasing for 50 years, the six-acre plot on which the dealership is located will cost another \$500,000. When the population explosion is completed the dealership will be well prepared. The glass-enclosed showroom for example, runs the entire 240-foot length of the building.

Building Construction

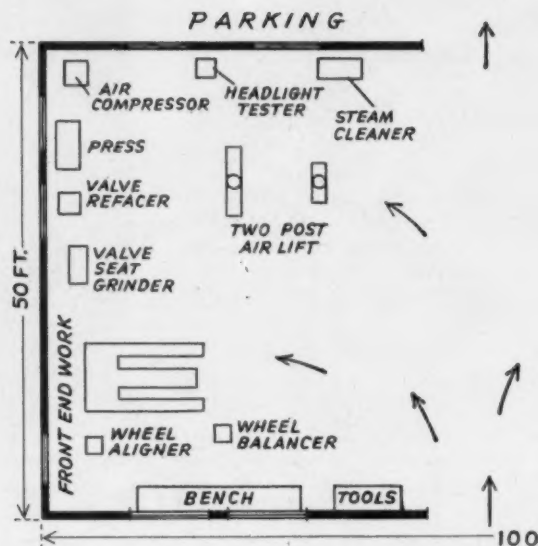
Before you build, you should check local

Modern equipment is a "must" in today's repair shop. This carburetor mechanic is flow testing one of the many units overhauled in the shop shown at top of page. This method of testing assures customer satisfaction with every unit before delivery.





This is a low-cost 30 × 144 ft. pre-engineered building for car maintenance and repair. Building has twelve overhead doors. (Stran-Steel Building)



At right is shown an independent repair shop with good traffic flow pattern. It has an air conditioner repair department to service a growing volume of this kind of business.

Good Shopkeeping . . . Continued

building ordinances and restrictions. Also a competent architect should be retained to advise you on building floor plans and blue prints. Find out as much as you possibly can about the types of building materials and construction principals. Advancements in styling and flexibility are helping pre-engineered steel buildings to gain acceptance among auto dealers. Mass production has enabled building

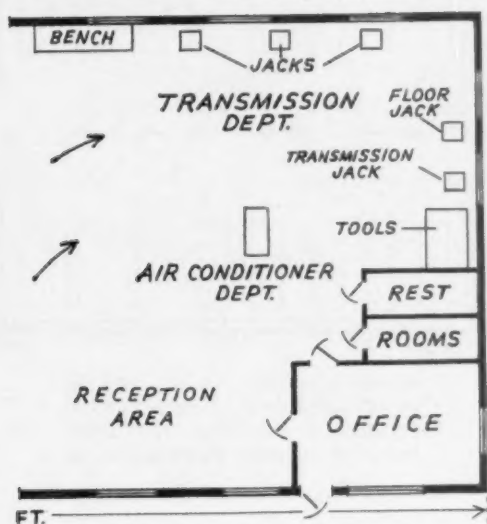
manufacturers to offer a wide choice of new sizes, shapes, colors, layouts and styles. Prefabrication of components permits erection to start often within days after a building is ordered. Simplified assembly techniques can complete a structure in a matter of weeks.

Rigid Frame Design

Rigid frame designs are popular for auto dealer buildings. This is because their column-free interiors provide unrestricted freedom

Interior view of the building shown upper left shows twelve car stalls including areas for paint touch-up, wash rack and grease rack. It is insulated for comfort summer and winter.

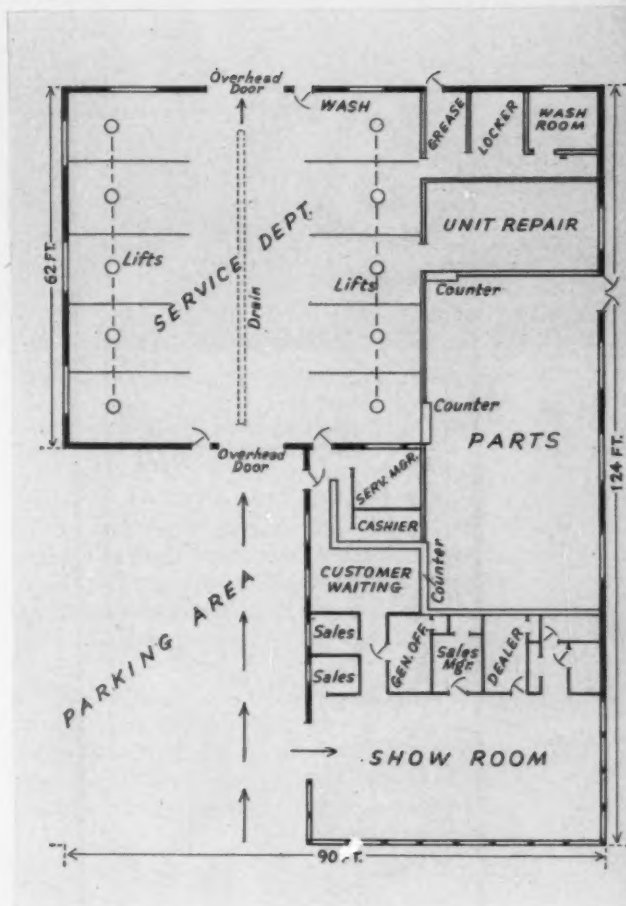




of interior layout. Expansion at a later date is accommodated economically. This is done by demounting steel-panel walls and reerecting a new frame. This operation can be done without the usual cost of supporting the old roof. Rigid frame buildings are available in a wide range of sizes.

One manufacturer of steel buildings, Armco Drainage & Metal Products, Inc., for example, mass produces 13 basic clean-span widths from 16 to 120 feet, seven wall heights

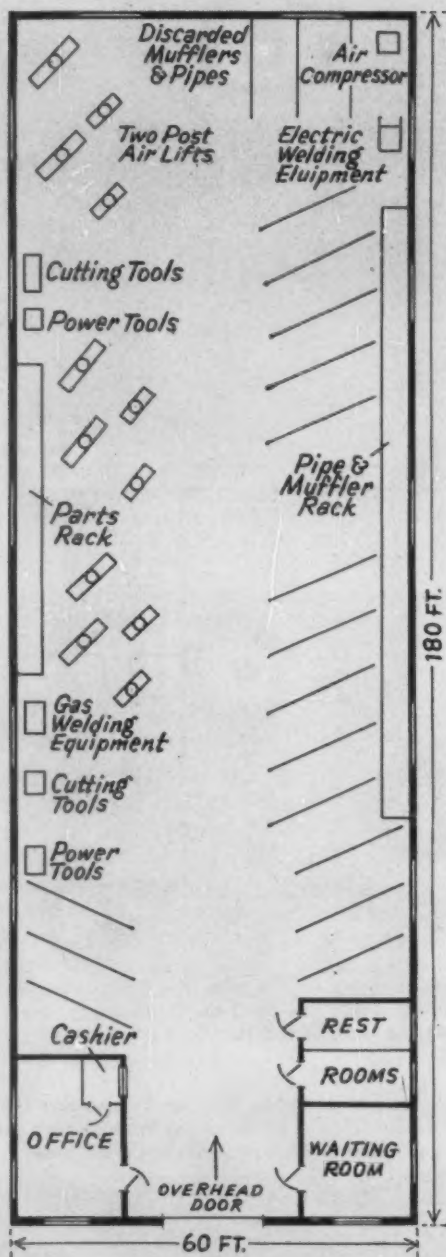
This new shop specializes in front-end alignment, wheel balancing, brake repairs and tune-up. The building is a 40 x 80 ft. pre-engineered structure.



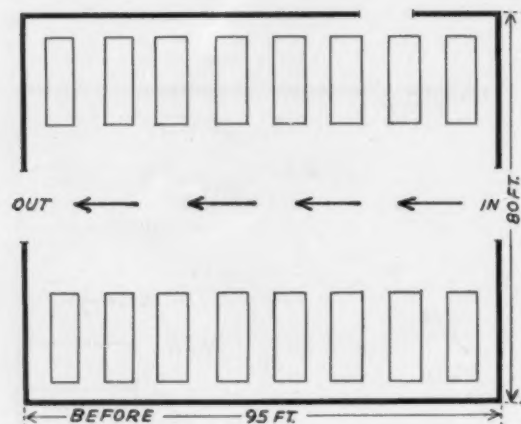
Above is shown a floor plan of a Volkswagen dealership. Building has 8500 sq. ft. of space and has 10 service stalls with lifts.

Below is a service repair area for Volkswagen. Note the number of lifts for servicing these import cars. The unit repair area is near the workshop area.





Unusually proportioned building is situated within a block of buildings. It shows the arrangement of the lifts for muffler and tailpipe installation. The entrance is directly off the street with a reception area just in from the entrance. It has a large overhead door. Service area is well lighted and heated.



Above layout shows how a shop has wasted valuable work space by locating doors in the center. The "after" layout at the right shows that by re-

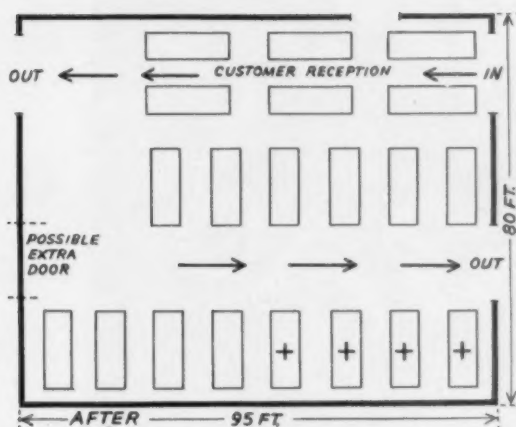
Good Shopkeeping . . Continued

from 8 to 24 feet, four length modules and four conditions for snow, wind, rain and live load.

The low, sloping roof of the rigid frame building complements the clean lines of today's automobiles. All pre-engineered buildings are designed in modular units to permit simple blending of glass, masonry and other conventional materials with standard steel panels.

Snow, road salt, mud and dust are not carried into this service department. Cars are rinsed down and water drains through grille-work across the floor inside the doors. Three overhead door heaters dry the car following rinsing. (L. J. Wing Mfg. Co.)





locating the entrance and exits an improved traffic pattern was achieved and four additional stalls were added to the shop.

Your building should have a well lighted interior and exterior and should be situated at a busy intersection, if possible. You want the passing motorists to see your place of business.

Entrance And Exit

If your existing location does not already have a separate entrance and exit it is well to look into this factor at once. A smooth flow for incoming and outgoing cars is always impressive. It gives an air of assurance to your



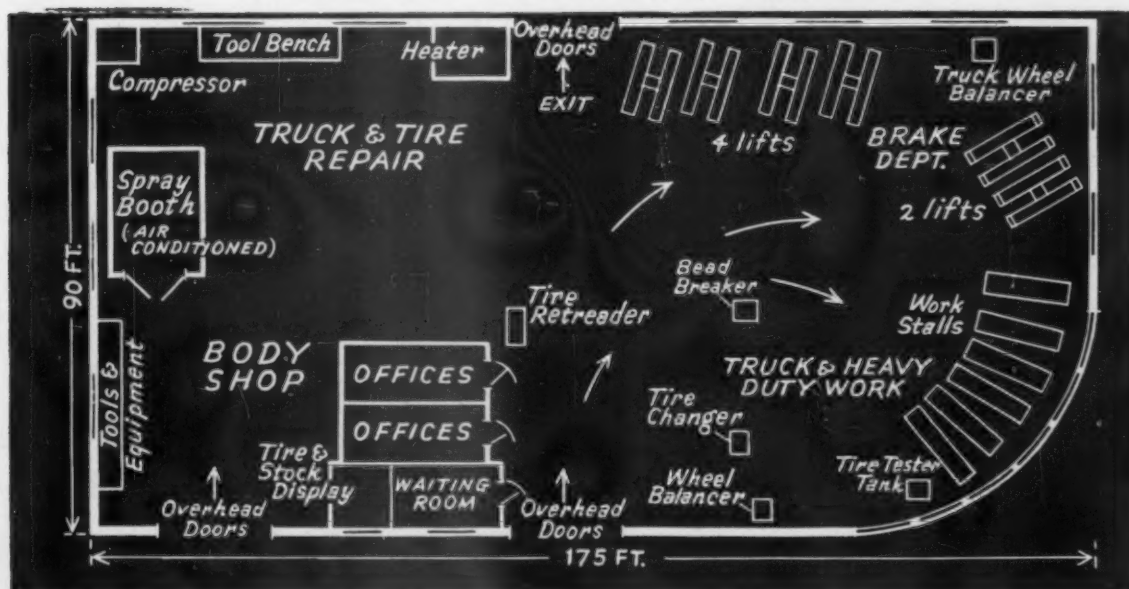
This service station by using outdoor lamps, especially jacketed as a protection against light-robbing cold and wind, provides high levels of illumination. (General Electric Co.)

place and demonstrates that your type of service is well equipped to handle any customer's car problem. Be sure that the service entrance is unobstructed and is wide to allow easy and safe entry into the building service area.

The entrance to the building between the street, and the doorway should not be less than 25 feet. Sharp turns at the entrance way should certainly be avoided. The parking area should always be kept free and clear of any

Continued on page 98

This shop specializes in truck and tire repair work. It is heated by radiant heat and has three overhead doors. In addition to an adequate number of lifts it has a body shop and spray booth.





Engine tune-up's are done quickly and efficiently by use of electric dynamometer, scope equipment.

Tools and Equipment in the

TO quote Robert Louis Stevenson: "Watch the Master and Learn a Tool's True Play." Stevenson appreciated the work of a master craftsman when combined with the proper tools. Are you being true with your tools and equipment, or are you, like some shop operators, allowing them to wear out, break or be thrown in the corner of the shop like a scrap part? Nothing is so sad as to walk into a repair shop like this writer has done many times, observing an expensive and sensitive piece of tune-up equipment covered with dirt and dust. This same test unit has been observed as being used as a hanger for fender covers and empty oil cans.

Now it just doesn't make any sense that an owner would allow this sort of thing to exist when this equipment was purchased to help him make his work easier, accurate and more profitable. How's your front end rack? Are the alignment heads updated for recent wheel size changes and fender contours? How often or when was the last time you had the rack checked with a spirit level and transit? You can't be doing accurate alignment work if

your rack and heads are not level and square. Don't forget, floors settle and sag plus the rack and heads get a jolt every time a car is run upon the rack. How are the power tools and hand tools you or your men are using? Is that ratchet slipping and skinning some

Continued on page 62

Air conditioning can only be serviced profitably by using the proper test and fill equipment.



By John K. Montgomery, Technical Editor



Power wrenches speed quick service operations such as rotating tires, relines, and unit service.

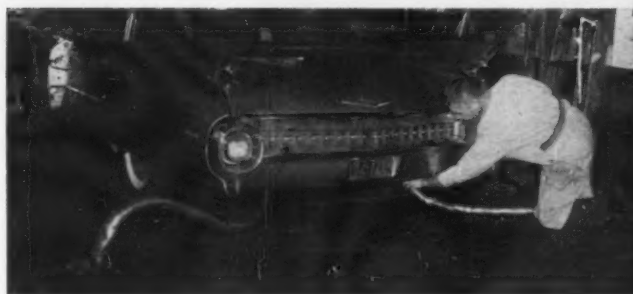
Modern Shop

*Modern tools and equipment
make work easier, accurate
and more profitable*

Proper alignment equipment is a must for accurate, profitable customer service in today's market.



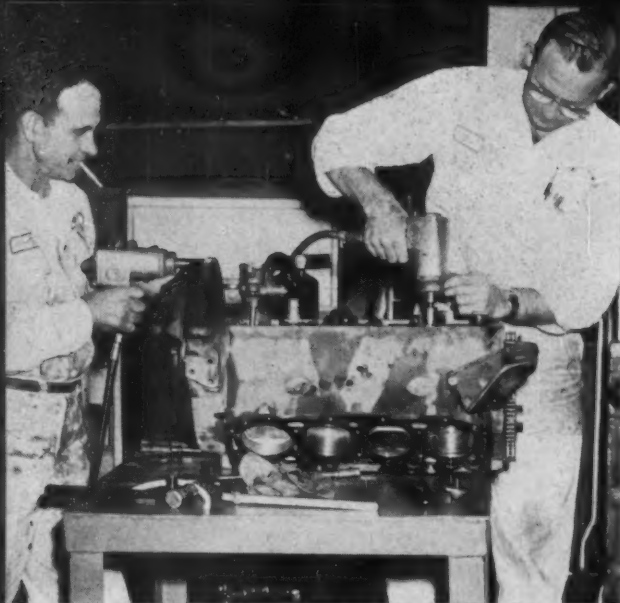
Use of scope in combination with the dynamometer eliminates road testing, quickly pinpoints trouble.



Built-in exhaust ventilation systems eliminate health hazards and increase shop efficiency.

Small hand tools are available which help mechanics speed quick service.





Teaming power tools and men increase shop productivity and provide profitable work turnover.

Tools and Equipment

Continued

knuckles and tempers? Is the impact wrench pooped-out because of wear in its parts? Maybe with the lifts, power tools and spray guns going at the same time you don't have enough air pressure to drive the tools or raise the lifts. All this wastes time if a man has to stand around while the single compressor builds up air pressure. Then too, don't forget you need more electrical power capacity if you're going to do any electrical welding or operate electrical power tools.

Take a good look at your shop from the customer's point of view. What do you think he'll see when he looks around? An engine test unit with broken bezels, air lines leaking through friction taped hoses, broken creepers skidding around the shop, tools laying on an uncovered fender, dirty drop light bulbs and greasy cords. Heck, this could go on and on, and on! Lets get with it. Things have changed in this day and age. Your customers have become used to the clean super-markets and bright self-service shopping centers. How does your place of business stack up against those for cleanliness and appeal to customers? Most of your service customers enter your shop through the rear service entrance. What sort of appearance does your back shop present? Can they see the tremendous invest-



Equipment that sells the customer on required service takes the high pressure out of service selling.

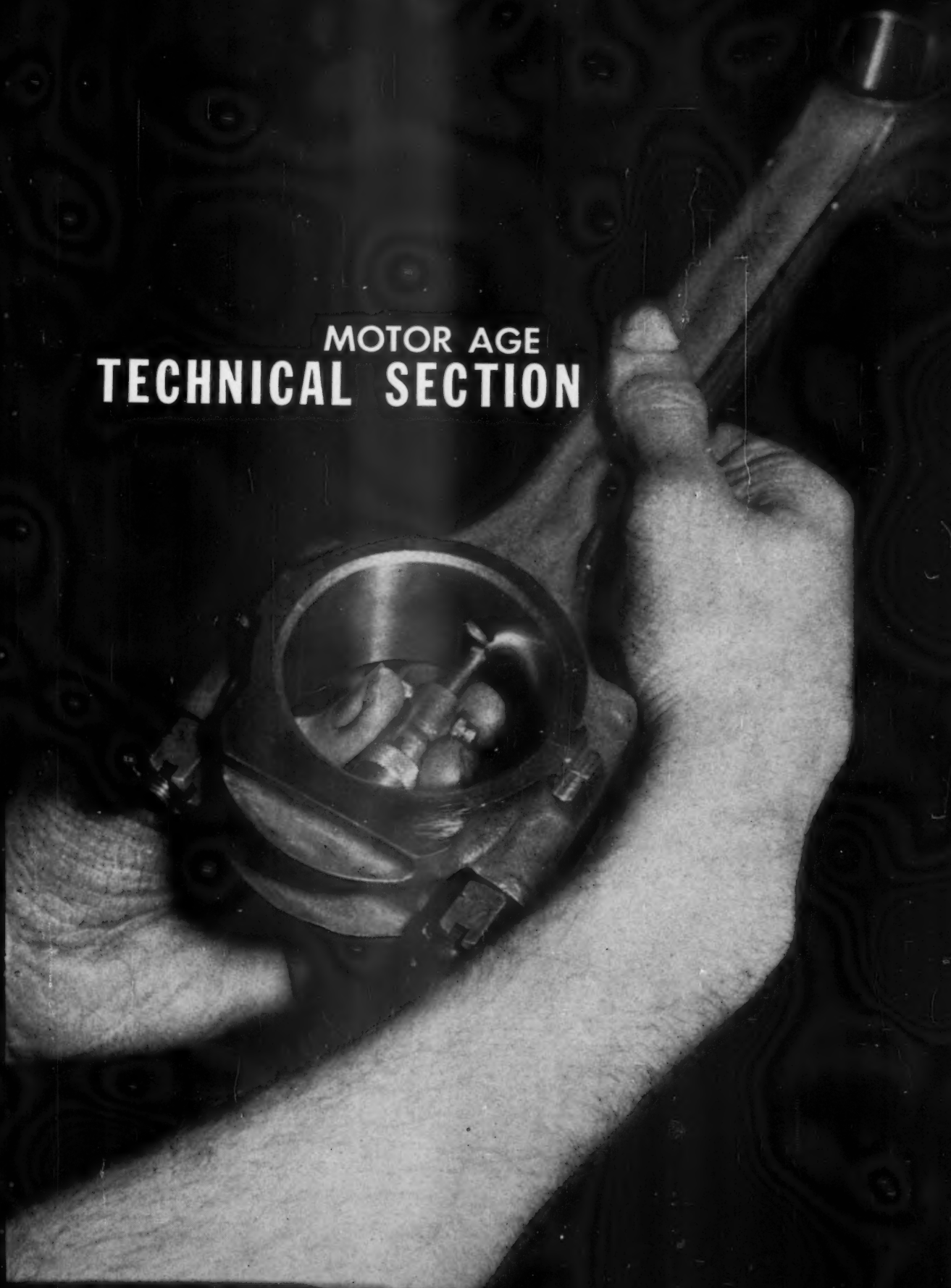
No shop can operate efficiently without a lift and a variety of stands, jacks and dollies.



ment you've made in modern service equipment? Or maybe you haven't bought the equipment and tools you need in this modern day competitive business. Setting points with a thin dime or calling card went out with the model "T." You need a cam angle meter and a distributor tester to do the kind of job your customers demand today. Proper tools and equipment, properly kept up and displayed give the customer the immediate impression that "this guy must know his business and know it well." It gives them confidence in the kind of work you do for them, and doing it with modern tools and equipment will make the work easier and more profitable for you.

Continued on page 99

**MOTOR AGE
TECHNICAL SECTION**



Lubrication

by INJECTION

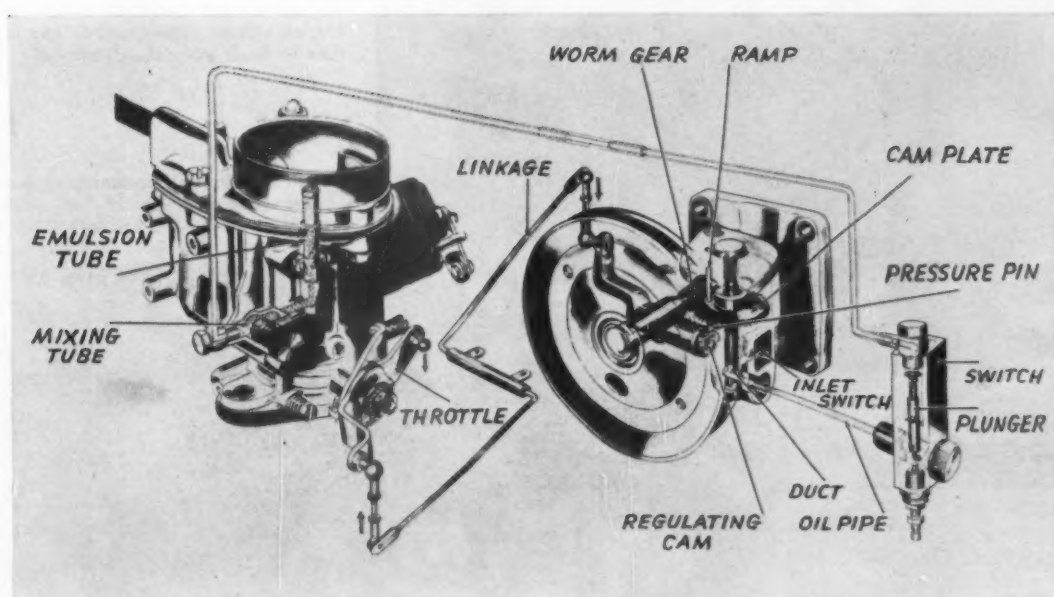


Auto Union junior deluxe five-passenger coupe. Standard equipment includes bucket seats, heater and defroster.

THREE Auto-Union-DKW passenger cars are being offered for 1962. They include the new DKW Junior Deluxe 2-door sedan, and two models of the Auto Union 1000 series. The DKW Junior Deluxe is powered by a DKW 800 cc. two-stroke three cylinder engine developing 39 hp. at 4000 r.p.m. The engine is water cooled and has sealed ball bearings for the crankshaft and roller bearings on the connecting rods. Transmission has 4 speeds forward and 1 reverse with synchromesh in all forward gears. The

front wheel drive and torsion-bar suspension at both front and rear provide good road-holding and cornering stability. Horsepower for the Auto-Union 1000-S coupe is 57 at 4500 r.p.m.—the Auto Union 1000 station wagon 50 at 450 r.p.m.

All of the new 1962 DKW engines will be equipped with this new revolutionary oil injection system. It eliminates the necessity of mixing oil with the gas as it had to be done in the past. From the first revolution oil is supplied to all lubrication points by means of



Details of the new automatic oil injection system. Standard equipment on all 1962 models.

DKW cracks the two-cycle engine oil and gas mixing barrier. Here's the details!

By Terrence J. McCabe, Feature Editor

this injection system. Oil supply is dependent on engine speeds. At all times the lubrication system is ready for action oil feed increases automatically as the engine speed rises; in other words with the increase in the lead. The combustion chambers of the two stroke engines need not be adapted to suit any working part, but can be designed to insure optimum overall efficiency of scavenging and combustion.

How It Works:

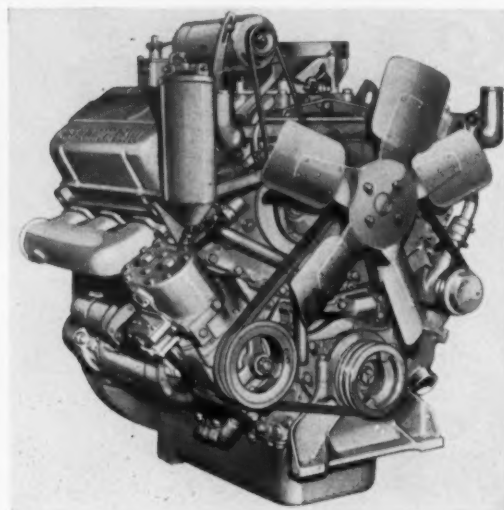
Unit is mounted on top of the exhaust manifold. Its oil tank holds 4 quarts of oil and its contents can be checked with a dip stick. The oil injection pump supplies oil to the carburetor in exact metered amounts, depending on engine speed and engine load. By

means of a V belt, the engine drives a pulley which rotates the piston cam plate unit thru a worm drive gear. Since every revolution of the piston opens the inlet duct from the oil tank and provides a suction stroke, the engine speed determines the amount of oil that flows into the pump cylinder. The pumping action of the piston is obtained by the lower stroke control pin and the upper pressure pin gliding over the respective top and bottom ramps of the cam plate. On acceleration, the opening throttle raises the stroke control pin thru the linkage and the regulating shaft cam, thereby increasing the stroke of the piston. As a result, more oil is displaced and injected thru the delivery duct into the oil pipe. Thru lubrication of its components the oil pump is constantly filled with fresh oil. The control lamp on the dash board lights up when insufficient oil pressure permits the guiding plunger to establish electrical contact on the bottom of the oil supply check switch. Thru the oil pipe, the oil enters the carburetor where it is automatically mixed with gasoline. The emulsion tube feeds the mixture to the engine, where the oil particles lubricate the piston, connecting rod bearings, and the wrist pin bearings.



The lever isn't used in actual use. Engine utilizes either fuel or any mixture of fuels without adjustment.

Below: The 6V-53 commercial truck engine adapted to multi-fuel operation. It develops 195 hp., c/r. 23-1.



MULTI-FUEL DIESEL

*Compression ignition
multi-fuel engine helps solve
an army logistical problem*

ONE phrase describes the reason for the development of a multi-fuel engine. That word is "military logistics," in other words, military supply problems. In World War II, approximately 60 per cent of the total tonnage shipped to combat theaters consisted of refined petroleum products. During the Korean conflict this percentage rose to 65 per cent. Obviously, if greater range could be obtained with the same tonnage of petroleum products a tremendous contribution would be made to the military supply problem.

The demand for a multi-fuel engine comes from the desire of the Army to be able to use

any type fuel available in a combat area. The demand is based upon a real concern as to available fuel supply in case of all-out-war.

The Detroit Diesel Division of General Motors Corp., was one of the companies working on the development of such an engine as the Army required. After several approaches to the problem, the Detroit Diesel Division decided to adapt a diesel engine to operate as a multi-fuel engine. The Army has already established even in the dieselization of its tactical vehicles that they should be able to operate satisfactorily on so-called CIE (Compression Ignition Engine) fuel as well as diesel. CIE fuel is a petroleum distillate in the gasoline-kerosene range, and Detroit Diesel's commercial engines prior to multi-fuel adaptation can and do operate satisfactorily on CIE fuel. The advantage, and the need for an engine which will burn fuels all the way from diesel #2 to CIE fuel and beyond, to and including

Continued on page 112

MOTOR AGE TRAINING PROGRAM



A great writer once said, "I know what pleasure is, for I have done good work." MOTOR AGE's readers know what pleasure is, for they have done a good job on the Motor Age Training Program. Both the Editors and our readers have derived a great deal of satisfaction from this program. The comments to the editors have been most gratifying and most welcome.

We call your attention to the test in this issue on the internal combustion engine; the type of test has been changed slightly as a trial run. It has true and false questions mixed with multiple-choice. Hope our readers like it.

Part 2

THE INTERNAL COMBUSTION ENGINE

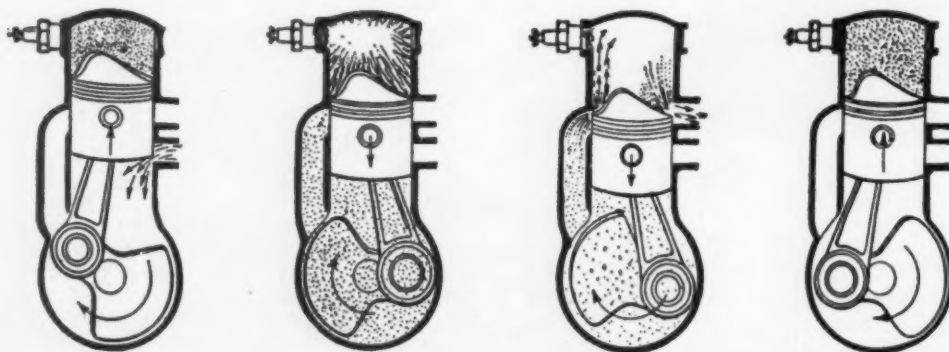
“Hey Dad!, look no intake valves! How’s this crazy thing work anyway?” “Easy Boy, just study this lesson and find out!”

THE two-stroke-cycle engine is used in a large variety of power requirements.

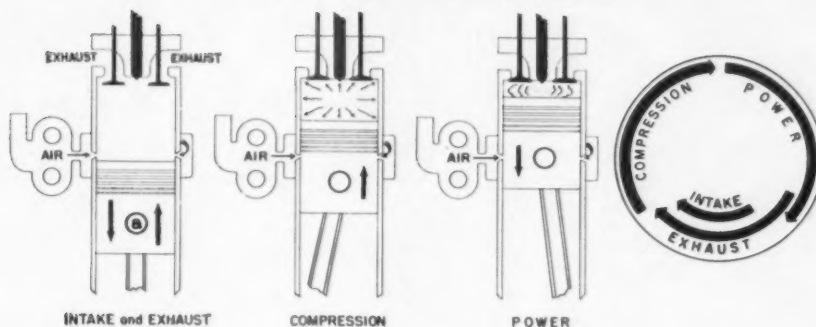
It is found in the small compact engines that are used in model airplanes and boats, power saws and outboard motors. It is also used in light and power emergency units, lawn mowers and water pumps. Some foreign

automobiles use the two-stroke-cycle engine to power their motion. The two-stroke-cycle internal combustion engine can be found in a wide spread of sizes and shapes. It is used for both gasoline and Diesel engines. Railroad, truck and marine installations use various forms of the two-stroke-cycle engine. As an

Below: left to right; intake and compression; power; scavenging; and finally intake and compression again. Every down stroke is a power stroke in the two-stroke-cycle, internal combustion engine. The above sketch shows the use of the downward stroke of the piston in the crankcase being used to create pressure for scavenging.



TWO-CYCLE DIESEL ENGINE



Above: the sequence of events in a two-stroke-cycle Diesel engine using exhaust valves and intake ports. The attached blower gives positive action to the scavenging process. The fuel injector is located between the two exhaust valves. Engines of this type may have as many as four exhaust valves per cylinder.

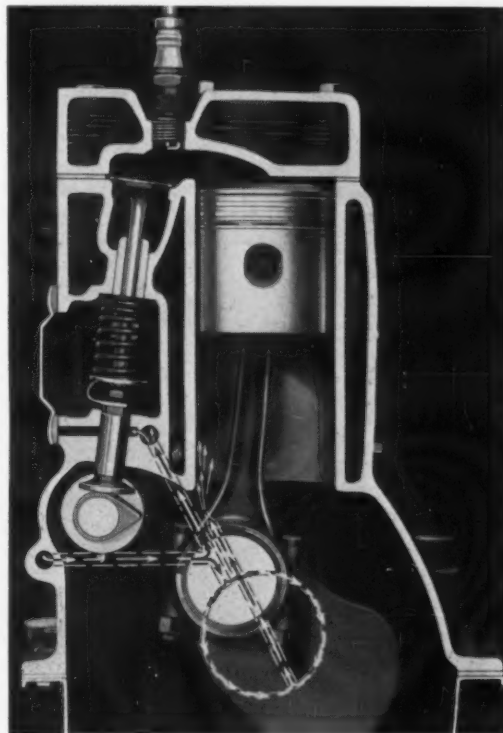
example of the size and type these engines can be found in: An American maker produces a six cylinder, 4250 horsepower, 250 r.p.m. Diesel two-stroke-cycle, single acting engine with a bore of 21 1/2 inches and a stroke of 31 inches. Other engines of the two-stroke-cycle Diesel type are made in the double acting and opposed piston type with both one and two crankshafts. Some of these measure fifty feet high from the center line of the crankshaft and have cylinder bores as great as three feet in diameter with combined strokes of around seven feet. Some of them develop around 1000 (one thousand) horsepower per cylinder and can burn any fuel from the heaviest crude oils through coffee beans and coal dust.

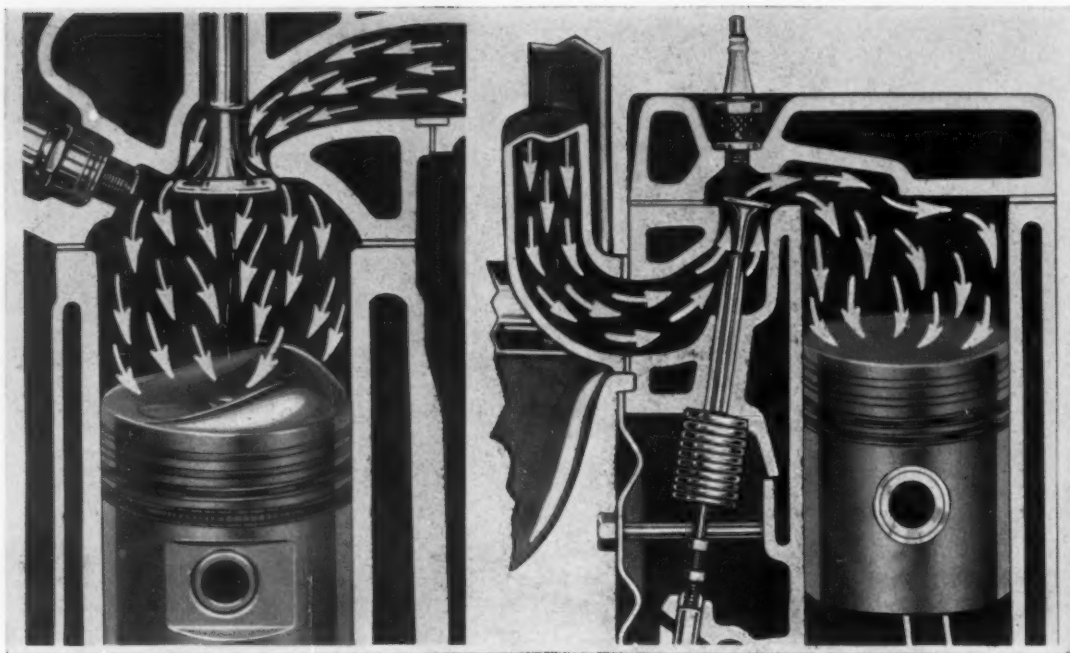
So it can be seen that the two-stroke-cycle engine principle is used in a great many applications. In America it is chiefly used in small portable and very large power applications. To our knowledge it isn't used in any American automobile. It is, however, used in several imported cars sold in this country.

The two-stroke cycle principle was developed by Sir Dugald Clerk around 1880. His engine completed all the events required for combustion and power in only two strokes of

Continued on next page

Typical cross-section of an "L" head type of engine. In this type of engine the intake and exhaust valves are located in the cylinder block.





Above: left; view of the combustion chamber in an "I" or overhead valve engine showing path of incoming charge past the intake valve. Right; the path taken by the fuel charge in the "L" head engine.

the piston, compared with four in the four-stroke-cycle engine. This meant that the series of events were accomplished in one revolution of the crankshaft rather than two revolutions as in the four-stroke-cycle engine.

The basic difference between the two-stroke and the four-stroke-cycle engine is the method of removing the burned gases and filling the cylinders with the fresh fuel and air charge. That is, fuel and air charge in the case of the gasoline engine and just plain air in the case of the Diesel. In the four-stroke-cycle engine these events are performed by the engine piston during the exhaust and intake strokes. In the two-stroke-cycle engine these operations are performed near the bottom dead center stroke of the piston with both occurring at approximately the same time.

Scavenging

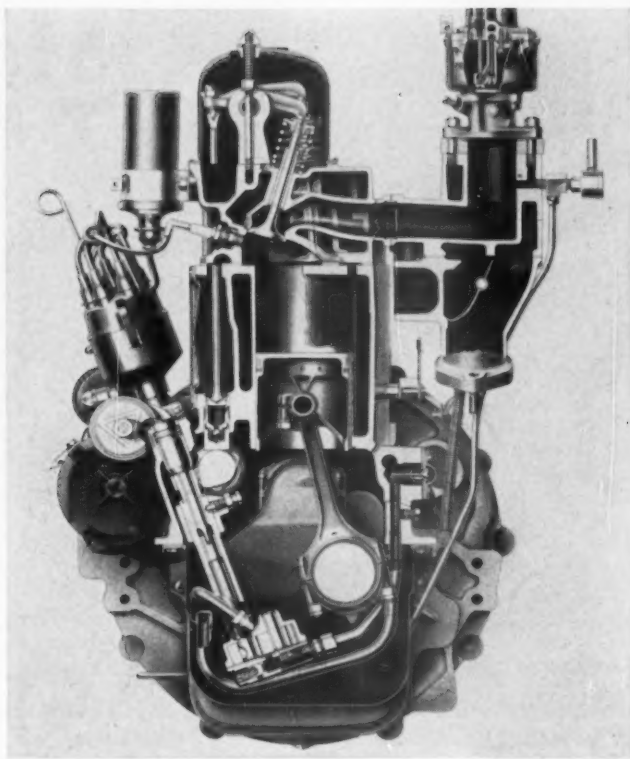
The compression, combustion, and expansion events do not differ from those of a four-

stroke-cycle engine. The filling of the cylinder, called *scavenging*, with a fresh charge may be explained as follows: When the piston has traveled 80 to 85 per cent of its expansion or power stroke, exhaust ports (openings in cylinder wall) or exhaust valves are opened. In the case of the exhaust ports, these are opened by the piston passing below them during the lower part of its stroke. The engine with exhaust valves, uses a camshaft driven at the same speed as the engine to operate the valve sequence.

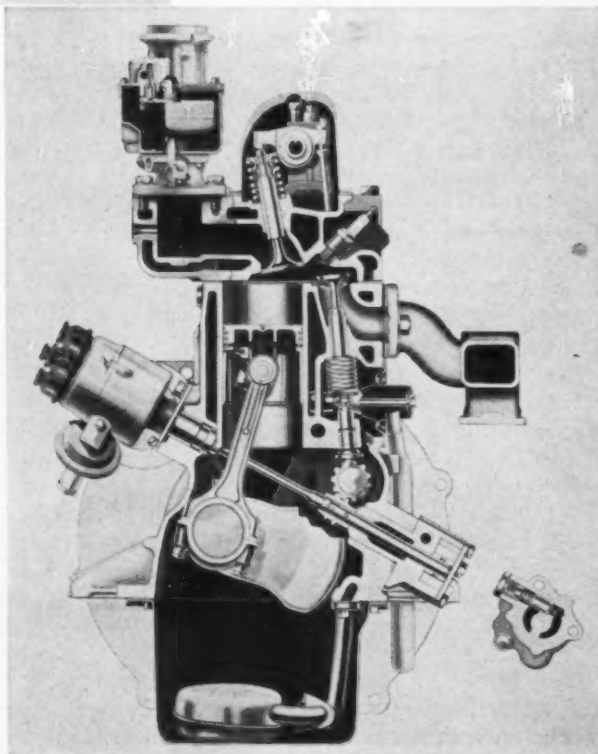
The instant the exhaust valves or ports are uncovered or opened the exhaust gases in the cylinder are expanded into the atmosphere or into the muffler. Further movement of the piston downward in its travel uncovers the intake ports. At the time the intake ports are uncovered, the exhaust gases have already discharged into the exhaust line and cylinder pressure is either atmospheric or slightly below atmospheric. This, on a naturally aspi-

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The Internal Combustion Engine2



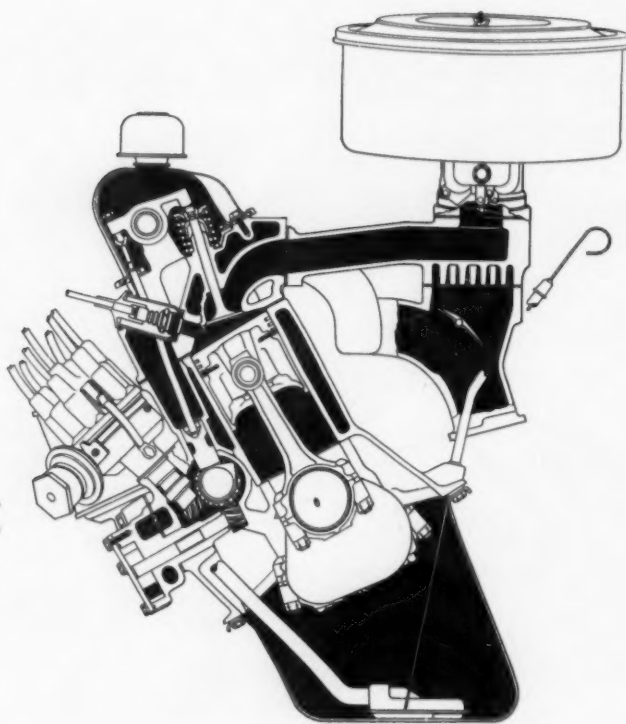
Cross-section of a popular make automobile engine using the "I" head design where intake and exhaust valves are located in the cylinder head.



Cut-away of the "F" head engine design with the intake valves in the cylinder head and the exhaust valves in the main block casting. This engine combines the valve features of both the "I" and "L" head engine.

The Internal Combustion Engine2

A recent arrangement of the "I" or overhead valve engine set at an angle in the chassis. Note the long "ram" type intake.



rated, (unsupercharged) engine allows a fresh charge to enter the cylinder at atmospheric pressure by way of the intake ports and blows the remaining exhaust gases out the still open exhaust ports or valves.

Some two-stroke-cycle engines use a blower which forces the fresh charge into the cylinder at between 3 to 7 pounds per square inch above atmospheric pressure. The use of the blower gives positive action to the engine scavenging process and results in a denser charge being admitted to the cylinder.

As the piston moves under BDC (bottom dead center) and starts back up the cylinder the exhaust valves or ports are closed and the intake ports close to begin the compression stroke. When the piston reaches near TDC, combustion of the charge occurs and the flame starts to burn the mixture as the piston moves on over TDC (top dead center) for the beginning of the power stroke.

Power Stroke

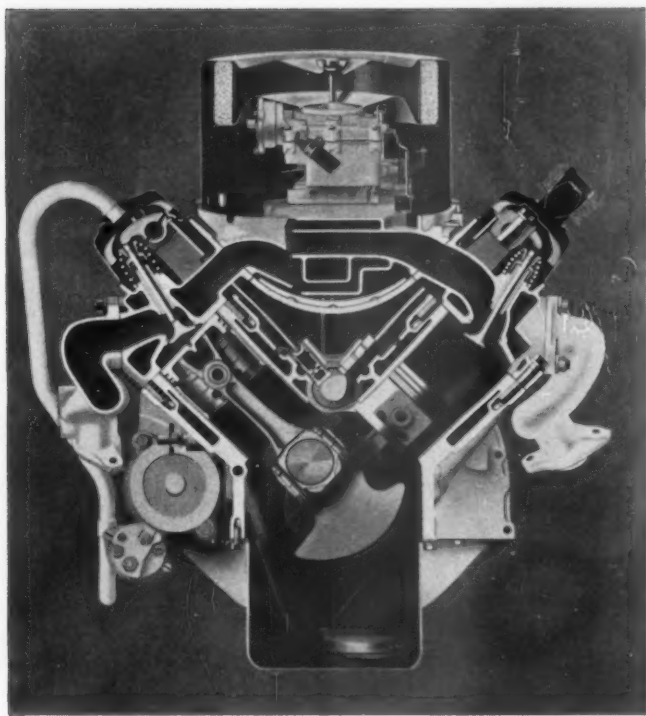
The burning charge expands and forces the piston down the cylinder for the power stroke until the exhaust ports or valves are

opened at about 80 per cent of the power stroke. The exhaust gases expand out the ports or exhaust valves and scavenging of the cylinder takes place at the lower end of the piston stroke. The same series of events start all over again: Scavenging (exhaust and intake) followed by compression, expansion (power) then scavenging, over and over and over again.

The two-stroke-cycle engine fires every cylinder in the engine during a complete revolution. As an example an eight cylinder two-stroke-cycle engine will fire all eight cylinders in one revolution of the crankshaft. Each cylinder will fire 45 degrees apart. The eight cylinder four-stroke-cycle engine will fire all cylinders in two revolutions of the crankshaft or 720 degrees of rotation. Each cylinder will fire 90 degrees apart with only half of them firing in one revolution.

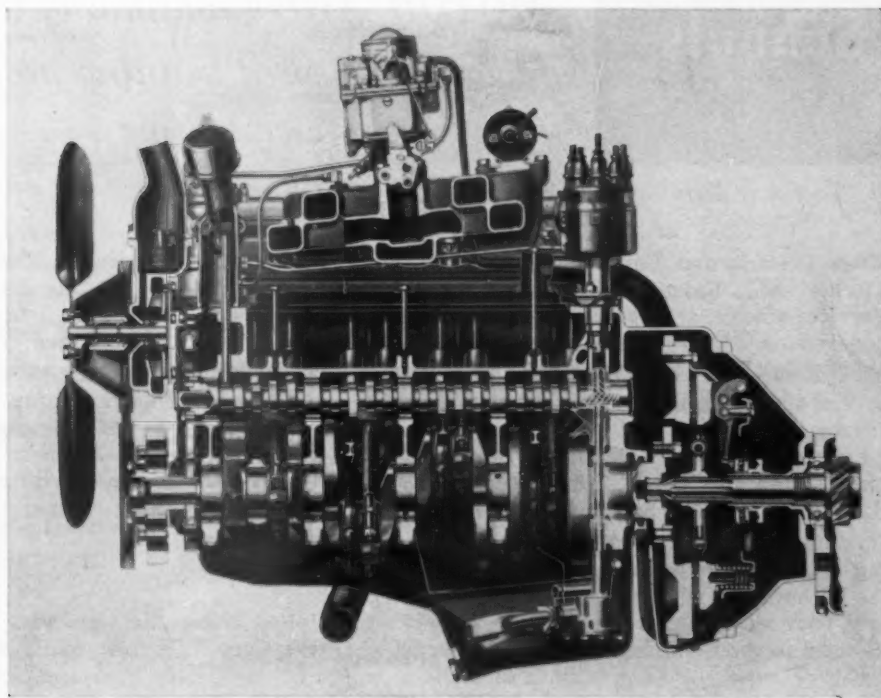
In the two-stroke-cycle engine every up stroke is a compression stroke and every down stroke is a power stroke. The advantage of two-stroke-cycle operation is the elimination of one scavenging and one charging

Continued on page 90



Cross-section of a typical "V"-8 overhead valve engine. "V" type engines use a common crankshaft with half as many crank throws as there are engine cylinders.

Length-wise cross-section of a "V"-8 engine showing two connecting rods per crank throw and camshaft drive arrangement.





Service Training Schools

MOTOR AGE's continuing list of factory sponsored training programs and field service schools

Allen Electric and Equipment Co., 2101 N. Pitcher St., Kalamazoo, Michigan. Allen Service schools are conducted under direct supervision of the Allen representatives in each area. The Allen Power-Tune Course covers diagnosis, and electrical performance troubles including training on regulators, generators, batteries, distributors, ignition circuit, and the use of Allen Scopes. Also, Allen PM Tune-Up School for learning the fundamentals of the tune-up business including servicing the merchandising. A nominal fee is charged. For school starting dates, contact your local Allen representative or write directly to the Company's Education Department.

Sun Electric Corporation, Chicago 31, Illinois offers courses in Testing Equipment Operation and Automotive Tune-Up Procedure. These are being offered at most of its branches on a part time evening basis, meeting four hours each evening, two evenings a week for a period of four weeks at a cost of \$40.00. Anyone interested in obtaining additional information concerning schools in various locations, may contact the Sun Branch nearest them.

United Motors Service, Div., of General Motors Corp., Detroit, Mich. UMS maintains
Continued on page 112

Please Print:

MOTOR AGE Training Program

NAME _____ DATE _____
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INTERNAL COMBUSTION ENGINES

Test VI

CUT OUT PAGE ALONG THIS LINE—SEE OTHER SIDE FOR INSTRUCTIONS

1. The two-stroke-cycle internal combustion engine is limited in its use to small bore, slow-speed engines.
a. () True b. () False
2. A sixteen-cylinder, two-stroke-cycle Diesel engine will fire all sixteen cylinders in one revolution of the crankshaft.
a. () True b. () False
3. In the two-stroke-cycle engine the camshaft rotates at:
☐ a. Twice the crankshaft speed ☐ b. Four-times the crankshaft speed
☐ c. Crankshaft speed ☐ d. One half crankshaft speed
4. Engines with both intake and exhaust valves located in the cylinder head are called:
☐ a. Head engines ☐ b. Cross-head engines
☐ c. L-head engines ☐ d. Overhead valve engines
5. Rocker arms are used in I-head and F-head engines to:
☐ a. Close the valves ☐ b. Move the push-rods
☐ c. To reverse motion ☐ d. To increase speed
6. In the F-head engine design the exhaust valves are placed in the:
☐ a. Cylinder block ☐ b. Cylinder head
☐ c. Crankcase ☐ d. Between the "V" banks
7. What is another name given to a Un-supercharged engine?
☐ a. Vented engine ☐ b. Naturally aspirated engine
☐ c. Scavenged engine ☐ d. Blown-engine
8. The I-head type of engine design can eliminate valve rockers and push-rods by use of:
☐ a. Roller levers ☐ b. Gears and cams
☐ b. Eccentric cams ☐ c. Overhead camshafts
9. The two-stroke-cycle engine has a combined intake and exhaust period.
a. () True b. () False
10. In the two-stroke-cycle engine pistons and cylinders run cooler than in a four-stroke-cycle engine.
a. () True b. () False

P.S. Don't forget to write your name and address above!

* Comments to the Editors:

MAILING INSTRUCTIONS

Answer the questions. Cut out and fold firmly along dotted lines and return promptly to the Editors of MOTOR AGE, postage free. It is not necessary to tape or seal envelope after folding.

Test will be graded and notification of your score will be mailed to you. Upon completion of entire mechanic training course, you will be awarded the MOTOR AGE Certificate of Completion.

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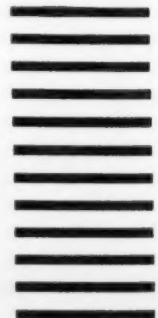
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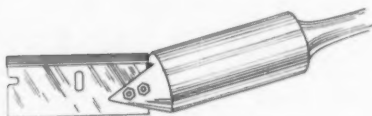
TIPS FOR THE BODY SHOP

Use Old Tire When Spray Painting Odd Parts

An old tire makes a very handy device when spray-painting odd parts. We lay the tire down on its side, then place a disk of plywood at top as a platform on which the pieces are laid for spraying. With most such spray work, it isn't necessary to use a drop cloth or other masking, since the tire catches all of the overspray. Make the lid so it fits on the bead of the tire only. *Ed Mayover, Eddie's Service, 1601—14th St., West, (U.S. 41), Bradenton, Fla.*

Razor Blade Attached To Soldering Iron Cuts Rubber

Our work with off the road and farm equipments often requires making thin rubber gaskets with various openings. This cannot be done cleanly enough either with a knife or razor blade. For this purpose we made a diagonal slit in the end of a soldering iron tip, to hold a single edge razor blade. It is then locked with two setscrews. The heat from the iron is transferred to the blade, which cuts

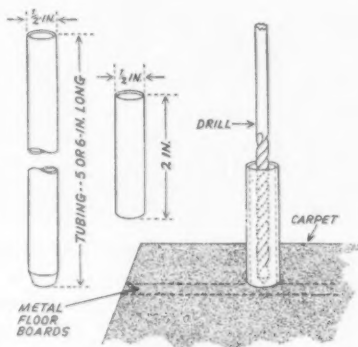


through the rubber with a cleanness impossible to achieve by any other method. *Henry Josephs, Sr., Joseph's Auto Service, Box 22, Gardenville, Penna.*

How We Drill Holes Thru Carpets Without Tearing

When drilling the holes for seat belts on cars, the drill will usually pull threads in the carpet, damaging it. The tool shown here will prevent this from happening:

1. Grind a cutting edge on the end of a $\frac{1}{2}$ inch o.d. piece of steel tubing about 5 or 6 inches long.
2. Cut another piece about 2 inches long.



To use: Cut holes in the carpet where the belts are to be placed with the sharpened piece of tubing. Then place the 2 inch piece into a hole already cut in the carpet. Place the drill into the 2 inch piece and drill the hole through the metal without damaging carpet. *L. Charlantinei, 77 Grosnenov Rd., Needham, Mass.*

Combine Leftover Paints For Economy Paint Jobs

Odds and ends of enamel can be used up and disposed of, sev-

eral ways around the paint shop. One way is to pour all enamels of a like color together and use for economy paint jobs for older used cars. Another use is to pour all of the different colors together and use it for painting around the shop, including benches and shop equipment. All colors poured together will produce a neutral gray, which can be tinted or lightened or darkened by the addition of more of the color of the shade desired. One shop uses this gray enamel for shop equipment and trims up everything with a little red. This makes a very pleasing color combination with built-in economy. *Don Baxter, 1607 9th St., Woodward, Okla.*

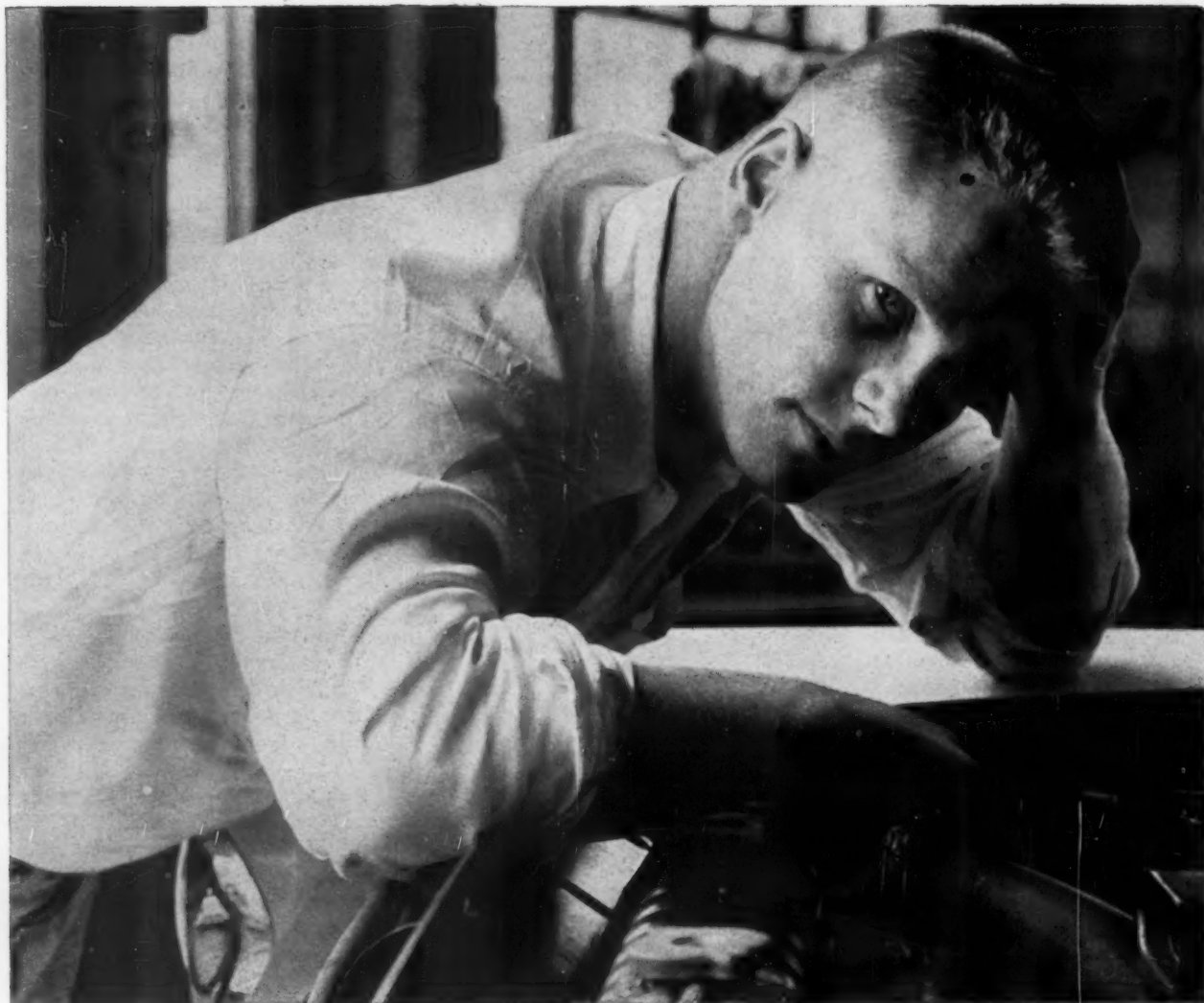
Removing Wrinkles From Newly Installed Headlining

Since a body man removes and installs a headlining so seldom it is difficult to install one without wrinkles. Recently after installing a new headlining that had a number of wrinkles in it I rolled all the windows up and set a electric hot plate inside the car with a bucket with a small amount of water in it, so as to create steam. After filling the car full of steam I open the windows to let the steam out. The steam removes the wrinkles and tightens the ceiling. *Walter C. Bruss, Lecom Star Rt., Rolla, Missouri.*

BODY SHOP TIPS are worth

\$10.00

If you've developed an idea that has helped you to do body and fender work or painting better or faster, it may be worth money. Jot down the idea and, if necessary, make a rough sketch. Sometimes a snapshot will help. Just make the description of your BODY SHOP TIP clear, and if it is used, you'll receive a check for \$10.00.



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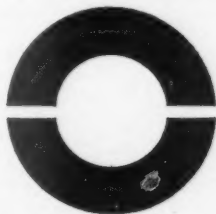
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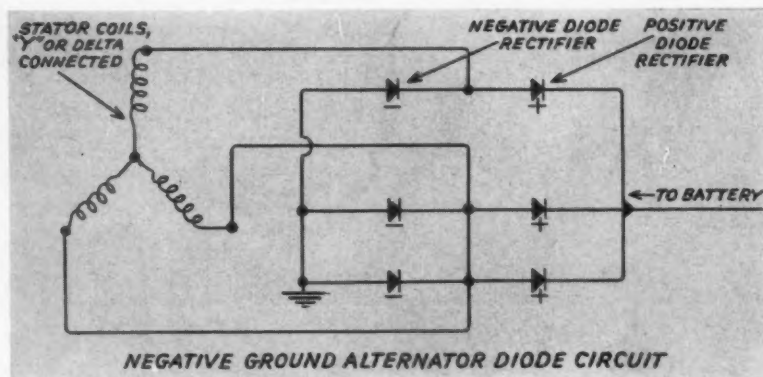
Editorial note: In response to requests "Clearing House" items are listed—marked by (ch) after the item. Shop Kinks are identified (sk) after title. Body Shop Tips are listed under the Body Work heading. The symbol (sf) after an item means the story was a special feature item in the MOTOR AGE Body Shop.



The February issue of MOTOR AGE will be a tent-like coverage of the International Automotive Service Industries Show. It will preview many of the New Products and the new Merchandising and Sales Promotion ideas which will be announced at the Show on Navy Pier, Chicago.

Readers' Clearinghouse

By John K. Montgomery, Technical Editor



Wiring diagram of Silicon diode hook-up in an alternator system.

Problem With An Alternator

We are essentially generator and starter rebuilders, and have recently run into a problem with alternators. After successfully rebuilding quite a number of alternators and testing them out on our generator test bench, we cannot get any readings on the last 4 units we have had. I have used the exact same method in checking all my alternators. There is only one thing about them that I cannot seem to figure out. There are three negative rectifiers and three positive rectifiers. When checking out these rectifiers in their respective circuits, they check out with current flowing in the negative ground direction. When disassembled, each rectifier, individually, three negative rectifiers show continuity in the other direction. Yet, when all six are assembled in the unit, they all check out with continuity in one direction only.

Morris Greenhut
G&S Automotives
E. Northport, N.Y.

I THINK maybe if you sit back and think a little of what your problem is, and as I understand

it from your letter, after making all the necessary checks and finding everything in order when the alternator is assembled and tested, no out-put is evident.

Normally, in an alternator, if everything individually checks out OK and then when the unit is assembled you get no output, generally it indicates an open or shorted stator windings. There is no simple way of checking stators other than checking all components individually and then testing the complete unit. In this manner if no output is received, then the stator is the fault. You probably know the Delco unit uses a plug type connector between the stator and the diodes similar to sealed beam light plug. This connector could have a bad connection which could be the cause of your problem.

With reference to polarity of your positive and negative diodes, this sketch of the wiring hookup in the alternator should clear up your problem on polarity. Each heat sink has 3 diodes of the same polarity. In the case of the DR unit the 3 negative diodes are located in the insulated aluminum heat sink. When each 3 sets of diodes are checked they will show either positive or

negative polarity and when combined as they are in our sketch the output will be positive or negative as the ground circuit dictates. Think of all the diodes as electric check valves allowing current to flow in one, only one direction.

Transmission Jumps Out Of Gear

I have a 1956 Chev. $\frac{1}{2}$ ton in my place that I have repaired the transmission two times in one month. The trouble is it jumps into high and in second gear when slowing down at 8 to 15 miles per hour. I have installed all new gears, bearings, rear engine supports, and U joint is OK. Have you any suggestions for a trouble of this kind?

Otis Juneau
Marksville, La.

FIRST of all I would suggest replacing the shift rail detent springs and balls. Then if no better, the flywheel housing alignment should be checked. The runout can be checked by mounting a dial gage to the flywheel—then crank the engine to find out how much runout. Install shims between the housing and transmission case.

Lift Information:

At a meeting of the Automotive Lift Institute held on October 17 in Washington, D.C., it was reported that as a result of liaison work with the vehicle manufacturers and actual lift tests, no problems are anticipated in lifting '62 model passenger cars with current models of lifts marketed by the industry. This includes the three new models introduced this year; namely, Ford Fairlane, Mercury Meteor, and Chevy II.

These three new passenger car models have unitized body constructions, front-mounted engines, and conventional type suspension systems. Other 1962 standard models and compacts are similar to 1961 models as far as lifting is concerned.

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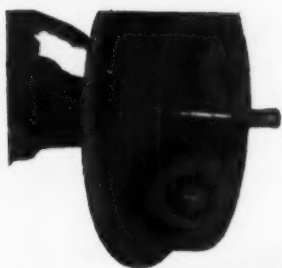
New Timken® Bearing Kit means more sales and profits for you

With a Timken® bearing kit you can replace tapered roller bearings in front wheels of 1949-1961 popular cars including compacts.

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Get in on the big market for front wheel bearings. Build front wheel safety check and wheel pack service. This

is the handiest, easiest and most profitable way to sell bearings. And you're selling the bearing that your customers know and prefer. Contact your Timken bearing authorized distributor or jobber today! The Timken Roller Bearing Company, Canton 6, Ohio.



New Products Shopping Center

New Muffler

*Has new "air-stream"
uni-tube shell*

Walker Manufacturing Co.: Announced is the new Continental Mark II Hi-Performance Muffler. This new muffler is of the straight-through "glass-pack" type. It is built on an entirely new concept of muffler design; the exclusive Air-Stream "Uni-Tube" shell construction company states. The complete shell, heads and connections are integrally formed from a continuous tube of heavy gauge steel. There are no seams to blow—no welded or crimped heads or connections to crack or break. *Write: Walker Mfg. Co., 1201 Michigan Boulevard, Racine, Wisconsin.*

Battery Checker

*Fully transistorized,
requires no adjusting*

United Motors Service, Div. of General Motors: It is claimed that servicemen can now check the battery as easily as checking the oil with this new Delco-tronic 12-volt battery checker. This precision instrument is fully transistorized. It requires no adjusting and yet is small enough to fit in a shirt pocket. In 5 seconds



servicemen can tell their customers whether their battery is up to the required voltage, it is claimed. If the voltage is right, a green light goes on. If not, a yellow light appears which indicates that the battery requires further checking with a light load tester.

Write: United Motors Service, Division of General Motors, General Motors Bldg., Detroit 2, Mich.

Service Stand

*Features a positive-action
ratchet release*

Weaver Manufacturing Division, Dura Corporation: A new automotive service stand recently introduced, features a positive-action ratchet release that cannot disengage under load, company states. The improved ratchet release also doubles as a carrying handle when the unit is not in



use. Another improvement featured by the WI-20 Wedge-Lock Service Stand is a more rugged sheet metal base. A pair of the new WI-20 Service Stands will support, in $\frac{3}{4}$ inch intervals, a ten-ton load from 15- $\frac{1}{4}$ inches to 25 inches off the ground. *Write: Weaver Manufacturing Division, 2100 South 9th St., Springfield, Illinois.*

Color Bar

*Holds five quarts or five
gallons of base colors*

The Arco Division of American-Marietta Company announced that Arco 45, their quick-drying automotive enamel, newly improved with Viodyne, is available for the first time on a space saving Color Bar. From 25 cans of Arco 45 basic and tinting colors, it is now possible for any jobber

or refinish shop to mix on the Bar, the exact color for any car, any model, produced during the past 10 years company states. A large, inventory of ready-mixed colors is completely eliminated.

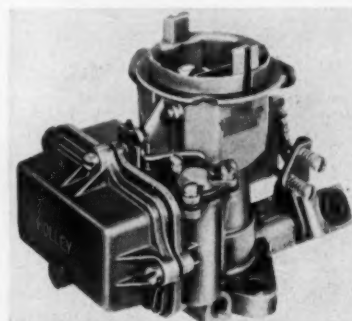


The new Arco 45 Color Bar is 34 inches long and 15 inches deep. It holds five quarts or five gallons of base colors. Each can is electrically agitated by a separate mechanical connection. *Write: The Arco Division of American-Marietta Co., 7301 Bessemer Ave., Cleveland, Ohio.*

Carburetor

Features simplicity in servicing

Holley Carburetor Co.: A new Holley carburetor will be introduced as original equipment on several Chrysler Corporation cars for the 1962 model year, it was announced. Model 1920 is Holley's first commercial application of a one-piece aluminum die cast carburetor body with a removable zinc fuel bowl. It is a single bore downdraft carburetor



with divorced choke. Simplicity in servicing is regarded as one of the features of the model 1920, it was stated. *Write: Holley Carburetor Co., Detroit, Mich.*

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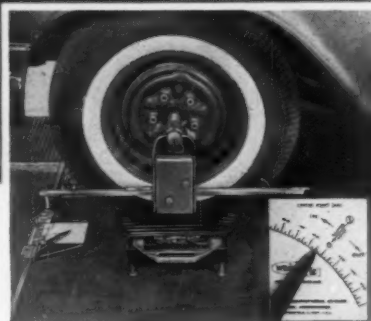
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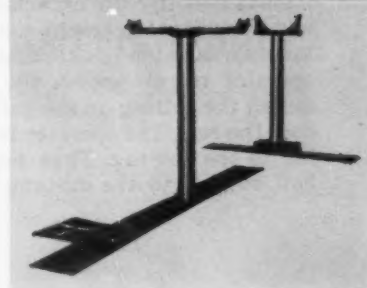
Precision 3-Way Gauges permit you to measure Camber, King-Pin (Ball Joint) Inclination and Caster quickly, easily. You get famous Weaver Turning Radius Gauges and the new Toe and Steering Center Point Gauge. New magnified scales permit faster readings. The Portable Wheel Alignment Tester will merchandise your service and increase your profits by showing the customer the need for your services. Write for complete details. Request Bulletin MA-486.



The Weaver Toe and Steering Center Point Gauge can be attached to any pair of Weaver 3-Way Alignment Gauges now in use. Eliminate Steering Center Point guesswork. See insert of large, easy-to-read, center point dial.



If you have a Weaver Twin Post Lift, you can combine the WJ-127 Outfit with your lift for alignment work and front end overhauls, as well as general service.



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**SERVICE
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OVER 50 YEARS SERVING THE AUTOMOTIVE SERVICE INDUSTRY

MERCHANDISING AND PROMOTIONS



Chicago Rawhide Manufacturing Co., Chicago, Ill. has developed a metal wall shelf for keeping the rear wheel oil seal installation tools handy and ready for all wheel service. The tool shelf conveniently holds the oil seal adaptor plates in stand-up position with ample room for the installation shank and a rawhide mallet. A specification card is included. It gives the proper plate number for installing a specific oil seal. These shelves fit underneath the new C/R modular cabinets for a modern, streamlined appearance.

Bear Manufacturing Co., Rock Island, Ill. is sponsoring a "Red Tag" Alinement Merchandising Program. It is designed to help the shop sell alinement jobs by graphically pointing out how tire life expectancy is reduced by mis-alinement. A bright colored red and yellow sign fits atop the alinement tester and the operator merely moves the large pointer to match the setting on the gauge dial. The sign does the rest. The operator transfers the reading to the red tag. Then tears off the upper half to give to the customer as a reminder.



He then places the lower half with the customer's name and address in the time slot agreed upon for a future appointment on the wall chart. Booklets explaining the program are available to the customer and to help sell jobs.

Martin Filter Corp., Edison, N.J. is offering a versatile merchandising rack for in-line gas filters. The new rack, suitable for counter-top use or wall hanging, takes advantage of the attractive "full-view" packaging of the gold colored units. The assortment provided in the new rack will fit the need for passenger cars and light trucks, as well as many heavy trucks. Twelve units covering all fuel lines from $\frac{1}{4}$ inch to $\frac{3}{8}$ inch and original equipment replacements are included, company states. Company claims that installation takes less than five minutes with the hose and clamps provided in the base of the package.

Skil Corporation, Chicago, Ill. announces that its new Skill Electric Auto Polisher Model 120 may be purchased at auto accessory stores, service stations and auto laundries. Each polisher is packed in a colorful, eye-catching point-of-sale display carton that sets up easily and takes little counter space,



company states. In addition to the shelf-display carton, promotion material consists of a self-mailer for distributor mailings to dealer prospects. This includes a postage free reply card for dealers to use in placing their orders. Other promotion material consists of a colorful window banner, newspaper ad mats in three sizes and a counter give-away envelope stuffer.

Libbey-Owens-Ford-Glass Company, Toledo, Ohio has a series of sales aids to merchandise safety glass replacement in automobiles at the retail level. They are designed for use both at the glass installer's place of business and in the field. These include a large flange sign of 20-gauge cold-rolled steel for exterior wall mounting. A combination of colorful red, white and blue lettering and background makes the words "Safety Glass Installed . . . Libbey-Owens-Ford" easily readable. A large window or wall poster reminding customers to specify E-Z-Eye Safety Plate Glass when replacing windshields is printed in full color as an influential point-of-purchase piece.



SAFETY GLASS INSTALLED

LIBBEY · OWENS · FORD

Internal Combustion Engine . . Continued from page 72

stroke required in four-stroke-cycle engine operation. It can be seen then that the two-stroke-cycle engine delivers one power stroke per cylinder for every revolution of the crankshaft as compared with one power stroke per cylinder for every two revolutions in a four-stroke-cycle engine. Theoretically, if all other conditions such as bore, stroke, speed, and gas pressures are equal, a two-stroke-cycle engine should develop twice the power of a four-stroke-cycle engine. This means also that a two-stroke engine should weigh only one-half as much as a four-stroke engine of the same power, and should produce a more even torque. Practical factors prevent the attainment of these ideal figures.

Some disadvantages of the two-stroke-cycle engine are its lack of idle stability which is necessary in an automotive engine, at least we think it should be in this country. The two-stroke operates with piston and cylinder at higher working temperatures due to combustion occurring every revolution. This can result in the distortion of these and related parts.

Types of Valve and Cylinder Arrangements

Engines are classified generally by the way the intake and exhaust valves are located. They are located either in the cylinder block or in the cylinder head. Many arrangements have been used in the past but currently they have settled down to three types. The three general engine types are: I-head, L-head and the F-head.

I-head

Engines using the I-head type of construction are commonly called valve-in-head or overhead valve engines. This is because the intake and exhaust valves are located in the cylinder head. This type of construction requires the use of a tappet, push-rod and rocker linkage for actuation of the valves. This linkage arrangement is required because it is necessary to reverse the motion of the tappet and push-rod by use of the rocker-arm due to the inverted position

of the valves in the cylinder head. Some I-head engines eliminate this linkage by placing the camshaft above the valves allowing the cams to act directly upon the valve stems. The I-head type of design is said to provide the most efficient means of allowing all the expansion power of the burning mixture to exert its pressure on the piston directly. It's one of the reasons that racing type engines generally are of the I-head type.

L-head

In the L-head type of engine construction, the intake and exhaust valves are located in the cylinder block along side of the cylinder wall. The valve operating



Location of valve assembly components in the "L" head type of engine construction. This same arrangement is used for the exhaust in "F" head.

gear (mechanism) is located directly below the valves and bears against the single camshaft which drives the valves in proper sequence. This type of design produces a very quiet engine valve train because of the rigidity of the construction and the fact that the valves and tappets are fully enclosed. One of the problems that an I-head engine still has (which is not found in the L-head) is the noise in the valve train.

F-head

In the F-head engine design, the intake valves normally are located in the cylinder head. The exhaust valves are located in the cylinder

block. This arrangement combines, in effect, the L-head and the I-head valve design. The valves in the cylinder head are operated by the camshaft by means of tappets, push-rods and rocker arms, similar to the overhead valve engine. The exhaust valves in the block are operated by the same camshaft just like the valves in the L-head engine. The F-head engine combines features of both the I-head and the L-head engines. Rolls-Royce and Willys have used this arrangement for sometime.

Engine Cylinder Arrangement

Engine cylinders can be arranged in many varieties; the common is, of course, the in-line and the V-type of construction. The in-line construction is where the cylinders are arranged along the center line of the crankshaft one after the other in a straight line, like the straight six or eight cylinder engine. It can be seen that this design has its limitations as to size because anything greater than eight cylinders only results in excessive length of the engine, plus increased stresses in the block and shafts. The compromise to the in-line engine is the V type of construction.

In the V-type of construction, two "banks" of an in-line engine are placed side by side at an angle and above the center line of the crankshaft. This design uses a common crankshaft for all "banks." Usually the angle of the V is 90 degrees for an 8 cylinder engine, 12 cylinder engine uses 75, 60, or 45 degrees between banks. The 16 cylinder V-type engine uses 45 and 135 degrees between banks. These engines use a crankshaft that has only half as many crankthrows as there are cylinders. Other cylinder arrangements are the Radial, horizontal-opposed (sometimes called the pancake engine), and the "X" arrangement with the "banks" set like the letter "X" and the crankshaft located in the center of the "X." The last is not found in normal auto engine design, but is used in Marine, rail and aircraft engines.

Another classification of engines that has reappeared is the air-cooled engine. These engines are like the Chevy "Corvaire" and the Volkswagon.

FOR A BETTER AND LONGER-LASTING SEAL ON ALL CHRYSLER WHEEL CYLINDERS* SINCE 1956..

it's the
NEW..
exclusive

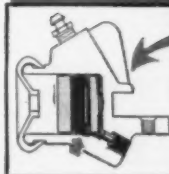
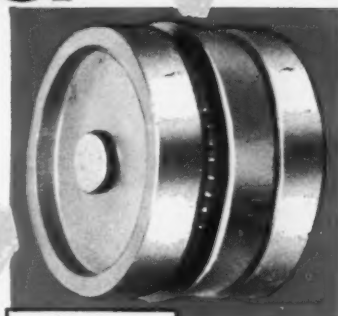


PISTON with the patented RIBBED CUP

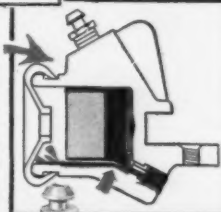
Here's the perfect answer to wheel cylinder leaks on Chrysler Products Cars* ... the NEW and exclusive-with-EIS leak-proof PISTON and patented RIBBED CUP combination! The piston is anodized aluminum ... the ribbed cup (moulded of HRC†) is the proven performer that has been successfully used in millions of Chrysler Products installations since 1941!

Sound EIS engineering has gone into this piston-cup combination. The flexible ribs on the cup ... an EIS patent ... provide the proper pressure at the point of seal ... insure smooth piston movement all the way! That's what makes for a leakproof, longer-lasting seal ... that's why you should use these new EIS Pistons in your next Chrysler Products wheel cylinder repair job!

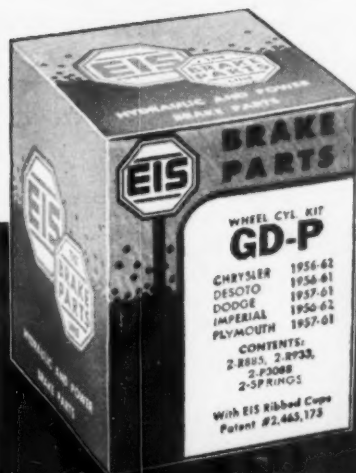
EIS combination leak-proof Pistons with Ribbed Cups are incorporated in all EIS Wheel Cylinders designed for replacement on Chrysler Products. They are also available in NEW GD-P Repair Kits containing 2 (1-1/8") Pistons, 2 Cups, 2 Boots and Springs.



WHEN EIS INSTALLATION IS MADE ... point-of-seal is intact even though piston assembly is pushed all the way into cylinder!

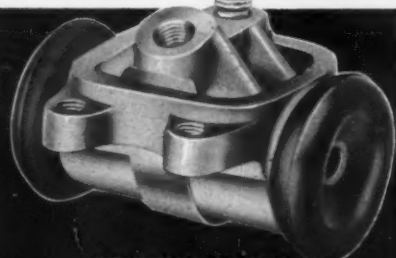


WHEN ORDINARY INSTALLATION IS MADE ... point-of-seal is broken when piston and cup are pushed all the way into cylinder, causing leaks and failure!



FOR CHRYSLER PRODUCTS CARS 1946 through 1955 ...

Use the EIS CA-P Wheel Cylinder Repair Kit. Contains 2 (1-1/8") Anodized Aluminum Pistons with Flexible Ribbed HRC† Cups plus 2 Boots.



SPECIFICALLY DESIGNED FOR REPLACEMENT ON

CHRYSLER	1956-62
DESOTO	1956-61
DODGE	1957-61
IMPERIAL	1956-62
PLYMOUTH	1957-61



MASTER CYLINDER KITS • WHEEL CYLINDER KITS • MASTER CYLINDERS • WHEEL CYLINDERS
POWER BRAKE KITS • POWER BRAKE PARTS • HOSES • SWITCHES • BRAKE FLUIDS • BRAKE BLEEDERS
BRAKE CABLES • HOLD-DOWN PARTS • POWER BRAKE TESTERS • BRAKE CUPS • TOOLS
HYDRAULIC CLUTCH REPAIR KITS AND CYLINDERS • CYLINDERS AND KITS FOR IMPORTED CARS

DESIGNING
ENGINEERING
MANUFACTURING
all under one roof

Ask your EIS Distributor or write for catalogs

EIS AUTOMOTIVE CORP.

Middletown, Conn.

Service Manager's Notebook

Changes In Plymouth's Cylinder Block

Plymouth has announced a change in the cylinder block of the 318 cubic inch V-8 engine. Eliminated is the four 1/4 inch water passage holes across the top of each cylinder block near the bores to improve engine sealing. The mating holes in each cylinder head have also been

eliminated. This change started with engine number R318-205312.

MoPar, Chrysler's parts division has made available a new gasket for service replacement on engines built before and after the above number. The gasket will avoid the possibility of water leakage into the tappet chambers. The gasket package is

available under the MoPar number 2129655.

Do The Whole Job When Replacing Ignition Coils

Every time an ignition coil is replaced because of a burned tower, carbon tracking, or any evidence of arcing at the tower, the nipple, or boot, on the coil end of the secondary lead should be replaced. Any arcing at the tower will carbonize the nipple so that replacing it on a new coil will invariably cause another coil failure.

If the secondary lead shows any signs of damage, it also should be replaced since it can cause arcing and therefore ruin a new coil.

Bleeding The Tandem (New) Master Cylinder

Bleeding the tandem (new) master cylinders can throw your men a curve. This type unit is used on the Cadillac and American Motors cars this year. There are two manufacturers of this type unit, Bendix and Delco-Moraine. The Bendix unit has its two reservoirs interconnected by a partial baffle. This allows the fluid to be common to each side when above the partial baffle. The air space above the fluid is also common to both filler caps and thus can give a problem when bleeding with a pressure tank.

To bleed the Bendix unit a spare filler cap must be obtained and the vent hole soldered shut. This then will allow bleeding of the brakes, both front and rear with the pressure tank at the same time. The soldered cap is to be marked as a tool for bleeding only and is never to be left on the customers master cylinder. A spare cap can be obtained from your local source of supply.

The Delco-Moraine unit has two completely separated master cylinder reservoirs. As a result of this, each side must be bled separately. One side bleeds the front brakes the other the rear brakes.



In 12 oz. spray cans
2 oz. and 8 oz. tubes

Highest in SILICONE content,

4X does the best job of preventing sticking, squeaking and freezing of weather-stripping. Also waterproofs electrical systems and stops corrosion of locks, antennae, battery terminals. Recommended by auto makers. Accept no substitute — at any price.

Specify 4X SILICONE... from your jobber.



Dow Corning CORPORATION
MIDLAND, MICHIGAN



THE BIG DIFFERENCE IN '62

ADVANCED THRUST

WHAT IT IS: A completely new concept in engine mounting and front-end suspension design. Advanced Thrust positions the mighty Wildcat V-8 and Turbine Drive forward over the front wheels. Placing more weight over these wheels enables them to resist being turned from their course by side winds. It takes advantage of the principle that the center of wind pressure against a moving car is toward the front end . . . and that more weight *ahead* of this center of wind pressure improves directional stability.

WHAT IT DOES: To begin with, Advanced Thrust makes your Buick track truer and straighter. But it also has other effects you'll appreciate. Snappier wheel response and return. Less road shock up the

steering column. Flatter cornering because the front-end frame has been made wider. And, with the engine moved forward, the front floor's gone nearly flat.

WHY YOU'LL LOVE IT: Advanced Thrust makes your driving safer, smoother, more relaxed. Your Buick stays right on course — even in gustiest crosswinds. Going is surer on ice, snow, wet roads. And with the new flatter floor, middle passengers have more room for legs, knees, and feet. See and feel the *big* difference in the '62 cars — drive the Advanced Thrust '62 Buick. Now at your Buick dealer's. Buick Motor Division—General Motors Corporation.

'62 BUICK

ANNOUNCING A NEW, RELIABLE WAY TO END CHRONIC RUN-DOWN BATTERY DUE

Motorola introduces all-electronic



MODEL A30 (30 AMP)
PRICED TO RETAIL FOR ONLY

\$59⁹⁵†

Complete package includes:
ALTERNATOR (with standard-size pulley). ALL-TRANSISTOR VOLTAGE REGULATOR (with all connecting wires). UNIVERSAL MOUNTING BRACKET. COMPLETE INSTALLATION INSTRUCTIONS.

Heavy-duty Model A45 (45 amp) slightly higher.

UNIVERSAL MOUNTING BRACKET FITS MOST 12-VOLT (NEGATIVE GROUND) DOMESTIC-MAKE CARS AND TRUCKS—COMPLETE SYSTEM INSTALLS IN LESS THAN 1 HOUR

New all-electronic alternator available in 2 sizes: 7-diode Model A30 for automobiles and light trucks; 8-diode Model A45 for police cars, taxis and similar heavy-duty use. Both models equipped with exclusive *isolation diode switch* that supplies current to electrical field of alternator and also operates battery discharge indicator light on dash. All-transistor voltage regulator

features solid-state electronic construction with no moving parts; provides perfectly smooth flow of current eliminating all light flicker. Stake-locked, completely moisture- and dust-proof. Universal mounting bracket fits most all domestic-make cars and trucks; places alternator in same position occupied by D.C. generator, requires no change in size of fan belt.

TO GENERATOR AND VOLTAGE REGULATOR FAILURES!

the world's first alternator system

**All-transistor voltage regulator and advanced new 7-diode alternator
—a complete all-electronic system! So trouble-free
it can be guaranteed* for 3 years (or 30,000 miles)!**

**Replaces trouble-prone electro-mechanical relays and contacts with
dependable transistors and diodes that virtually never wear out.**

Motorola, a world leader in electronics, introduces the first all-electronic alternator system. It's virtually trouble-free, costs less than any other kind on the market, and is far easier to install. You'll find a ready and profitable market for it among car owners plagued by chronic battery trouble.

Unlike D.C. generators, Motorola's new alternator system *supplies a charge at idle speeds* to offset much of the heavy drain that lights, heater and power accessories would otherwise put on the battery. The system thus keeps the battery at a uniform high level of charge, providing far more de-

pendable starting and better all-around car operation *plus* longer battery life.

Unlike other alternator systems, Motorola's all-transistor voltage regulator has *no* contact points to stick or burn . . . nothing but trouble-free transistors and diodes that virtually never wear out!

In addition, this new system features an exclusive isolation diode switch that operates the discharge indicator light on the dash, eliminates the need of a separate ammeter. It's the most significant advance in alternator systems. Write today for complete facts.

* MANUFACTURER'S GUARANTEE COVERS REPAIR OR REPLACEMENT OF PARTS WITHIN 3 YEARS OR 30,000 MILES (WHICHEVER OCCURS FIRST). LABOR PLUS REMOVAL AND RE-INSTALLATION NOT INCLUDED. ARRANGED THROUGH SELLING DEALERS.

† MANUFACTURER'S SUGGESTED RETAIL PRICE. PRICE AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

Be ready to profit on this all-new, all-electronic alternator system.

★ ★ ★

**Contact your Automotive Supply Jobber for complete
information or write today to Motorola Consumer Products, Inc.,
Dept. G-64, 9401 W. Grand Ave., Franklin Park, Ill.**

 **MOTOROLA**
new leader in the lively art of electronics

Who's Running Scared? Continued from page 51

In recent years, many dealers have emphasized service business toward objective of volume selling of new cars. Often there is more make-ready on the new cars before they were ready to be put out on the floor which put an added load on the dealers' service facilities which in some cases was already limited. It may, therefore, be a mixed blessing for many dealers and the increased service business might be some-

thing that they would just as soon do without. Much depends on the individual dealer's attitude. If he is a volume seller with limited service facilities, he won't welcome extra return trips by the owner. If he is a dealer who counts on service profits as important in his overall operations, his attitude will be favorable. Currently the National Automobile Dealers Association is trying to get clarification and

standardization of the car factory policies in this respect so the dealers will know just where they stand.

What About The Future?

With car owners confused about "lubeless" automobiles, with car dealers themselves confused about 12 and 12 warranties and with everyone confused about oil drain periods, what to do about it?

And something indeed must be done if on-the-lift or under-the-car-inspection sales are still to be made.

The first thing we have to recognize is that we must keep car owners coming back somehow at regular intervals. Otherwise, they won't get the exposure to other automotive products and services that we all have for sale. Some major oil companies have already recognized this and are already emphasizing the overall concept of comfort, safety and savings.

Help Up-Grade Operator

This is a serious problem—not only facing the major oil companies but anyone in our end of the business. *If time on the lift with all its opportunity for selling is diminished even gradually, there is going to have to be more and more selling on the island.*

Depending on the type of products you sell, this may or may not be a problem. If you have something readily visible, such as a fan belt, which can be checked the instant the hood goes up, it may not be much of a problem. *For others, those products used underneath or inside the engine, you'll have to worry about making better salesmen out of gas pumpers.*

Cooperate With Recognized Groups

We can cooperate with the American Petroleum Institute, the Automotive Service Industry Assn., the National Safety Council and other recognized groups who are trying to educate the motoring public toward better car care.

The 1960 National Safety Council survey shows one car in four unsafe. This picture gets worse—not better—because just three years ago only one car in every five was found unsafe. Correction of these unsafe items not only helps perform a public service but produces a sale at the same time.



Add an extra \$8,000, \$12,000, \$15,000 a Year SERVICING RADIATORS!

Now, the world's largest radiator servicing equipment manufacturer offers the complete package: Equipment, merchandising, "Pays-for-Itself" payment plan, complete factory school (free training for you or your man).

And Radiator Servicing produces top profits, quickly!

"\$900 Monthly Average", first 4 months—M. J. Wilson Co., Shelbyville, Ill.

"\$13,500 First Year", —Automotive Service Co., New Castle, Ind.

"\$800 Monthly Average", first 7 months—Walterboro Auto Parts, Waterboro, S. C.

FREE! Mail coupon today for Inland's New "Blueprint for Profits", a 32-page booklet showing various shop combinations. Tells exactly what you'll need to set up a complete radiator servicing dept. Gives prices, outlines "Pays-for-Itself" plan, describes experiences of others.

INLAND MFG. CO., Dept. MA-12, 1108 Jackson St., Omaha 2, Nebr.

Mail Coupon Now!

INLAND MFG. CO., Dept. MA-12, 1108 Jackson St., Omaha 2, Nebr.

Please send new free book, "Blueprint for Profits."

FIRM _____ (PLEASE PRINT)

ADDRESS _____

CITY _____ ZONE _____ STATE _____

BY _____ TITLE _____

If dealer, make of car sold _____
Are you now operating a radiator dept.? ☐ Yes ☐ No



Tools and Equipment Continued from page 62

Time is money for both your customer, your men and yourself. How better can you save time for all and that's money, than investing in the latest and most modern type of equipment? Today's customer wants quick and accurate service. Many shops and automobile dealers are changing their method of servicing in order to comply with customer demands. They are using teams of two men per work stall, fully equipped with modern tools and equipment to hold the modern customer. They want fast, efficient service and if they don't get it, you've lost a customer. Now very few operators can afford to lose customers just because they won't cater to present day buyer demands. Times are changing, we are, in the United States, presently in a marketing and servicing revolution. Look around your place of business—what do you see? Changes, changes everywhere. Are you going to stand still and let your customers pass you by? Let's get rolling with the times . . . wake up and look around you . . . walk into that shop of yours and give it a clean sweep. Check that equipment, replace it or have it repaired if it needs it. Look those hand tools and power tools over, maybe some of that old iron doesn't fit today's cars? We've seen some piles of old iron tools in shops that are real knuckle busters and a great boon to the sale of emergency first aid kits. Some of them look like they are made by a bunch of drunken blacksmiths on a dark night. Go to your jobber and look at the new and modern, time saving

and money-making tools he has on display. Take a look at the small hand tools neatly packaged like potato chips at the local pub. New modern hand and power tools can mean the difference between a profitable job and a losing, time consuming, back breaking dog of a job. How about that power tool you bought right after the Second World War? You're not getting any



All types of attachments can be used in your rotary power tool to speed the completion of repairs.

younger and you can bet your bottom dollar that tool isn't either. It's more than likely a bulky unit and pretty heavy. While you're at the jobber's counter pick up those new power wrenches . . . feel the big difference in weight and wait until you try them for size in a tight service situation. Boy! will that make a difference. Once you start to modernize your tools and equipment, keep a close eye on the shop books and watch them zoom in the profit column.



Modern tools and equipment can be used for additional profit making "quick" service operations.

**Arrangements
of
Tools and Equipment
in the
Service Areas
Shown in
Good Shopkeeping
Section
Pages 52-59**

New from Ken

automatic SELF-LEVELING BATTERY FILLERS

- FLOW AUTOMATICALLY!
- SHUT OFF AUTOMATICALLY!
- FILL TO CORRECT LEVEL!
- BIG 2½-QUART CAPACITY

Ken's New B-70 Automatic Battery Filler quickly fills to correct level—shuts off automatically. No spills . . . No dripping. Ideal for dry charge batteries. Both valve and container are made of high-impact styrene and polyethylene to withstand long, hard use with either water or battery acids. Also features the only automatic valve for which all parts are replaceable!



Dual-Automatic FILLER and TESTER

Another "first" by Ken, this B-71 Automatic Filler and Tester is combined in a single unit to make battery service a one-stop operation. Fills batteries to correct level automatically.

Tests either 6 or 12 volt systems with visual trouble indicator. Extra wire, with simple clip, makes it easy to locate many other car shorts.



*Find trouble
fast and easy*

- Sell more charges
- Sell more batteries
- Sell more service

CALL YOUR JOBBER

Put one of these sales builders to work for you now!



Get your pocket-size copy of Ken's all-new, complete-line catalog. Ask your jobber or write Ken direct.

K-961-126 A

THE KEN-TOOL MFG. CO.
AKRON 5, OHIO

*Largest exclusive manufacturer of Specialized
Tire Changing Tools, Equipment, and Garage
Tools . . . Known and used around the World.*

Good Shopkeeping Continued from page 59

obstruction and rubbish. The parking area should allow adequate space for parking, completed jobs and for customer parking. Viewing the building from the outside, check to see that windows, tiles are sparkling clean. Broken panes should be replaced at once. If these Good Shopkeeping practices are maintained, then your place will encourage motorists to stop in for service.

Overhead Doors

Overhead doors are recommended. The opening should at least be between 12 to 14 feet in width. The height of the door should be 11 feet clear when opened and even more, if your establishment services trucks. Ceiling heights in your shop or dealership should be based on 12 feet minimum for passenger cars service and a minimum of 14 feet if

trucks are serviced. This will allow adequate space for hoists and monorail installation.

Once the customer drives into your place it is important that he be given courteous and prompt attention. The service reception area should be inviting and a place should be set aside for an attractive waiting room for the customers. The reception area should be planned for straight through traffic flow. This permits faster handling. Be sure that the entrances and exits permit this one-way flow through the service department. Integrate the aisle pattern with the traffic flow in the streets. Clockwise flow is advisable as it permits right turns into the public traffic.

LUCAS gives you "on the spot" service, coast to coast!



Every Dot's a LUCAS Dealer or Distributor
Every Star's a LUCAS Factory Branch!



LUCAS

ELECTRICAL SERVICES, INC.

501-509 West 42nd St., New York 36, N. Y.

LAMPS • DISTRIBUTORS
GENERATORS • COILS
HORNS • REGULATORS
STARTERS • WINDSHIELD WIPERS
GIRLING BRAKES • BATTERIES
GIRLING SHOCK ABSORBERS

United States Factory Branches

ENGLEWOOD, N. J., 30 Van Nostrand Ave.

LOS ANGELES 16, Calif.,

5025-5029 W. Jefferson Blvd.

S. SAN FRANCISCO, Calif., 171 Beacon St.

CHICAGO 41, Ill., 5001 W. Belmont Ave.

HOUSTON 20, Tex., 6055-6057 Armour Dr.

JACKSONVILLE 5, Fla., 400 S. Edgewood Ave.

SEATTLE 8, Wash., 5516 First Ave. South

BOSTON, Mass., Southwest Pk.,

Rt. 1 at Rt. 128, Westwood

DENVER 7, Colo., 6001 E. 38th Ave.

BALTIMORE 6, Md., 7114 Commercial Ave.

Service Department

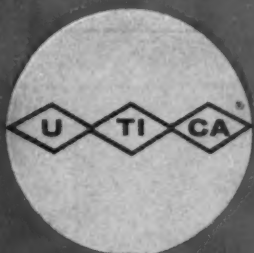
The service department should be well lighted and stall areas marked for proper parking of the cars. According to one car manufacturer, there should be four service stalls available for every three service technicians. A general purpose stall requires 350 sq. ft. of floor space. This would be a 10 x 25 ft. stall and a 10 x 10 ft. aisle. The entire service area layouts require 400 sq. ft. per stall. This includes regular and oversize special purpose stalls, aisle space and other service functions within the service area proper. These areas include the tool room, service desk, space, service manager's office, etc.

Service stalls next to walls and special purpose stalls such as lubrication, wash, wheel alignment and body and paint require a minimum width of 12 ft.

Practice Good Shopkeeping

The service department of a dealership, shop or service station should be well equipped and Good Shopkeeping should be the "Golden Rule." The service department must never give the impression of disorder and carelessness. It should be open for customer inspection at all times. The major function of the automotive service establishment as far as physical layout and equipment goes is to attract the customer inside. Once inside it is necessary to impress

Continued on page 101



UTICA HERBRAND

the great new name in tools!

Herbrand, one of the automotive industry's largest producers of standard and special mechanic's hand tools, has joined forces with Utica . . . world's largest producer of quality pliers and adjustable wrenches for the electronic, mill supply, automotive and hardware industries. GREATER STRENGTH THROUGH UNITY . . . joining forces with Utica guarantees our ability to maintain the same high standards of quality that have made Herbrand famous since 1881. It also increases our capabilities for new tool development and on-time delivery. For news on the next "tool of the month" and big new developments ahead, see your established Herbrand jobber.

Utica / Herbrand
TOOLS DIVISION
KELSEY-HAYES COMPANY
UTICA 4, N. Y.

1962 Tune Up—Alignment Specifications

MAKE AND MODEL	No. of Cylinders, Bore and Stroke (In.)	ENGINE		TUNE-UP DATA										FRONT END ALIGNMENT				
		Max. Brake Horsepower	Spark Plug Make and Size (Mm.)	VALVES				IGNITION						Steering Axis Inclination (Deg.)	Caster (Deg.)	Camber (Deg.)	Toe-In (In.)	
				Seat Angle		Tappet Operating Clearance		Breaker Point Gap (In.)	Cam Angle (Deg.)	Spark Plug Gap (In.)	Spark Occurs (Deg.)	Timing						
				Inlet (Deg.)	Exhaust (Deg.)	Inlet (In.)	Exhaust (In.)											
AMERICAN MOTORS CORP.																		
Rambler... American (Deluxe & Custom)	6-3 1/2 x 4 1/4	90	Ch-14	45	45	.016C	.018C	.020	39	.035	3B	8	1/2 N to 1/2 P	1/2 N to 1/2 P	1/2 N to 1/2 P	1/2 N to 1/2 P		
..... American 400 (Std. Eng.): Deluxe & Custom (Eng. Opt.)	6-3 1/2 x 4 1/4	125	Ch-14	45	45	.012H	.016H	.016	32	.035	6B	8	1/2 N to 1/2 P	1/2 N to 1/2 P	1/2 N to 1/2 P	1/2 N to 1/2 P		
..... Classic (Deluxe & Custom)	6-3 1/2 x 4 1/4	127	Ch-14	45	45	.012H	.016H	.016	32	.035	5B	6 11'	1/2 N to 1/2 P	1/2 N to 1/2 P	1/2 N to 1/2 P	1/2 N to 1/2 P		
..... Classic 400 (Std. Eng.): Classic (Del. & Cus.) (Eng. Opt.)	6-3 1/2 x 4 1/4	127	Ch-14	45	45	Hyd	Hyd	.016	32	.035	5B	6 11'	1/2 N to 1/2 P	1/2 N to 1/2 P	1/2 N to 1/2 P	1/2 N to 1/2 P		
..... Ambassador	8-4 x 3 1/2	250	Ch-14	30	45	Hyd	Hyd	.017	34	.035	7C	6 11'	1/2 N to 1/2 P	1/2 N to 1/2 P	1/2 N to 1/2 P	1/2 N to 1/2 P		
CHECKER MOTORS CORP.																		
Checker... Superba, Marathon	6-3 1/2 x 4 1/4	80	Ch-18	30	44	.014H	.014H	.020	39	.029	4B	7	2P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Superba, Marathon (Eng. Opt.)	6-3 1/2 x 4 1/4	122	Ch-14	30	44	.017H	.023H	.020	39	.032	3 1/2 B	7	2P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
CHRYSLER CORP.																		
Chrysler... Newport	8-4 1/2 x 3 1/2	265	CA-14	45	45	Hyd	Hyd	.017	30	.035	10B	6 1/2	0 to 1N	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... 300	8-4 1/2 x 3 1/2	305	CA-14	45	45	Hyd	Hyd	.017	30	.035	10B	6 1/2	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... 300 (Eng. Opt.)	8-4 1/2 x 3 1/2	340	CA-14	45	45	Hyd	Hyd	.017	37	.035	10B	6 1/2	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... New Yorker	8-4 1/2 x 3 1/2	340	CA-14	45	45	Hyd	Hyd	.017	30	.035	10B	6 1/2	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... 300-H	8-4 1/2 x 3 1/2	380	CA-14	45	45	.015H	.024H	.017	37	.035	10B	6 1/2	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
Dodge... Lancer	6-3 1/2 x 3 1/2	101	CA-14	46	46	.010H	.020H	.020	43	.035	2 1/2 B	7 1/2	0 to 1P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Dart (Std. Eng.): Lancer (Eng. Opt.)	6-3 1/2 x 3 1/2	145	CA-14	46	46	.010H	.020H	.020	43	.035	2 1/2 B	7 1/2	0 to 1P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Dart	8-3 1/2 x 3 1/2	230	CA-14	45	45	.010H	.018H	.017	30	.035	5B	7 1/2	0 to 1P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Polara (Std. Eng.): Dart (Eng. Opt.)	8-4 1/2 x 3 1/2	305	CA-14	45	45	Hyd	Hyd	.017	37	.035	10B	7 1/2	0 to 1P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Imperial	8-4 1/2 x 3 1/2	340	CA-14	45	45	Hyd	Hyd	.017	30	.035	10B	6 1/2	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
Plymouth... Valiant	6-3 1/2 x 3 1/2	101	CA-14	46	46	.010H	.020H	.020	43	.035	2 1/2 B	7 1/2	0 to 1P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Savoy, Belvedere, Fury (Std. Eng.): Valiant (Eng. Opt.)	6-3 1/2 x 3 1/2	145	CA-14	46	46	.010H	.020H	.020	43	.035	2 1/2 B	7 1/2	0 to 1P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Savoy, Belvedere, Fury (Std. Eng.): Savoy, Belvedere, Fury (Eng. Opt.)	8-4 1/2 x 3 1/2	230	CA-14	45	45	.010H	.018H	.017	30	.035	5B	7 1/2	0 to 1P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Sport Fury (Std. Eng.): Savoy, Belvedere, Fury (Eng. Opt.)	8-4 1/2 x 3 1/2	305	Ch-14	45	45	Hyd	Hyd	.017	37	.035	10B	7 1/2	0 to 1P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
FORD MOTOR CO.																		
Ford... Falcon	6-3 1/2 x 2 1/2	85	AL-18	45	45	.018H	.018H	.025	37	.034	5B	7	1 1/2 P to 2P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Falcon (Eng. Opt.)	6-3 1/2 x 2 1/2	101	AL-18	45	45	.018H	.018H	.025	37	.034	5B	7 1/2	1 1/2 P to 2P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Fairlane	6-3 1/2 x 2 1/2	101	AL-18	45	45	.018H	.018H	.025	37	.034	6B	...	1 1/2 P to 2P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Fairlane	8-3 1/2 x 2 1/2	145	AL-18	91	91	Hyd	Hyd	.015	27	.034	7B	...	1 1/2 P to 2P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Galaxie	6-3 1/2 x 3 1/2	138	AL-18	45	45	AM	AM	.026	37	.034	5B	6 1/2	1/2 N to 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Galaxie	8-3 1/2 x 3 1/2	170	CA-18	45	45	.018H	.018H	.015	27	.034	5B	6 1/2	1/2 N to 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Galaxie (Eng. Opt.)	8-4 x 3 1/2	220	CA-18	45	45	Hyd	Hyd	.015	27	.034	5B	6 1/2	1/2 N to 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Galaxie (Eng. Opt.)	8-4 x 3 1/2	300	AL-18	45	45	Hyd	Hyd	.015	27	.034	5B	6 1/2	1/2 N to 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Thunderbird	8-4 1/2 x 3 1/2	300	Ch-18	45	45	Hyd	Hyd	.015	27	.034	7B	9 1/2	0 to 1N	0 to 1P	0 to 1P	0 to 1P		
Lincoln Continental... Comet	6-3 1/2 x 2 1/2	85	AL-18	45	45	.018H	.018H	.025	37	.034	5B	7 1/2	0 to 1P	0 to 1P	0 to 1P	0 to 1P		
..... Comet (Eng. Opt.)	6-3 1/2 x 2 1/2	101	AL-18	45	45	.018H	.018H	.025	37	.034	5B	7 1/2	0 to 1P	0 to 1P	0 to 1P	0 to 1P		
..... Meteor	6-3 1/2 x 2 1/2	101	AL-18	45	45	.018H	.018H	.025	37	.034	5B	7 1/2	0 to 1P	0 to 1P	0 to 1P	0 to 1P		
..... Meteor	8-3 1/2 x 2 1/2	145	AL-18	45	45	AM	AM	.026	37	.034	5B	6 1/2	1/2 N to 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Monterey	8-3 1/2 x 3 1/2	138	AL-18	45	45	AM	AM	.026	37	.034	5B	6 1/2	1/2 N to 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Monterey	8-3 1/2 x 3 1/2	170	AL-18	45	45	.018H	.018H	.015	27	.034	5B	6 1/2	1/2 N to 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Monterey (Eng. Opt.)	8-4 x 3 1/2	220	AL-18	45	45	Hyd	Hyd	.015	27	.034	5B	6 1/2	1/2 N to 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
..... Monterey (Eng. Opt.)	8-4 x 3 1/2	300	AL-18	45	45	Hyd	Hyd	.015	27	.034	5B	6 1/2	1/2 N to 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P	1/2 P to 1 1/2 P		
GENERAL MOTORS CORP.																		
Buick... Special Standard	6-3 1/2 x 3 1/2	135	AC-14	45	45	Hyd	Hyd	.016	30	.033	7 1/2 B	7 1/2	0 to 1N	1/2 N to 1 1/2 P	1/2 N to 1 1/2 P	1/2 N to 1 1/2 P		
..... Special Deluxe	6-3 1/2 x 2 1/2	155	AC-14	45	45	Hyd	Hyd	.016	30	.033	7 1/2 B	7 1/2	0 to 1N	1/2 N to 1 1/2 P	1/2 N to 1 1/2 P	1/2 N to 1 1/2 P		
..... Special Skylark (Std. Eng.): Special Std. & Del. (Eng. Opt.)	8-3 1/2 x 2 1/2	190	AC-14	45	45	Hyd	Hyd	.016	30	.033	7 1/2 B	7 1/2	0 to 1N	1/2 N to 1 1/2 P	1/2 N to 1 1/2 P	1/2 N to 1 1/2 P		
..... LaSabre	8-4 x 3 1/2	280	AC-14	45	45	Hyd	Hyd	.016	30	.033	12B	9 1/2	1/2 N to 1 1/2 N	0 to 1P	0 to 1P	0 to 1P		
..... Invicta, Electra 225 (Std. Eng.): LaSabre (Eng. Opt.)	8-4 x 3 1/2	325	AC-14	45	45	Hyd	Hyd	.016	30	.033	12B	9 1/2	1/2 N to 1 1/2 N	0 to 1P	0 to 1P	0 to 1P		
Cadillac... 62, 63, Fleetwood 60 & 75	8-4 x 3 1/2	325	AC-14	44	44	Hyd	Hyd	.016	30	.035	5B	6	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N		
Chevrolet... Corvair	6-3 1/2 x 2 1/2	80	AC-14	46	46	Hyd	Hyd	.019	33	.038	4B	7	3P 3 1/2 P	0 to 1P	0 to 1P	0 to 1P		
..... Chevy II	4-3 1/2 x 3 1/2	90	AC-14	46	46	Hyd	Hyd	.019	33	.037	7B	7 1/2	1/2 P to 1 1/2 P	0 to 1P	0 to 1P	0 to 1P		
..... Chevy II	6-3 1/2 x 3 1/2	120	AC-14	46	46	Hyd	Hyd	.019	33	.037	10B	7 1/2	1/2 P to 1 1/2 P	0 to 1P	0 to 1P	0 to 1P		
..... Biscayne, Bel Air, Impala	6-3 1/2 x 3 1/2	135	AC-14	31	46	Hyd	Hyd	.019	32	.037	7B	7 11'	1/2 N to 1 1/2 N	0 to 1P	0 to 1P	0 to 1P		
..... Biscayne, Bel Air, Impala	8-3 1/2 x 3 1/2	170	AC-14	46	46	Hyd	Hyd	.019	30	.036	4B	7 11'	1/2 N to 1 1/2 N	0 to 1P	0 to 1P	0 to 1P		
..... Biscayne, Bel Air, Impala (Eng. Opt.)	8-4 x 3 1/2	250	AC-14	46	46	Hyd	Hyd	.019	30	.036	4B	7 11'	1/2 N to 1 1/2 N	0 to 1P	0 to 1P	0 to 1P		
..... Biscayne, Bel Air, Impala (Eng. Opt.)	8-4 x 3 1/2	380	AC-14	46	46	.008H	.018H	.019	30	.036	12B	7 11'	1/2 N to 1 1/2 N	0 to 1P	0 to 1P	0 to 1P		
..... Corvette	8-4 x 3 1/2	250	AC-14	46	46	Hyd	Hyd	.018	30	.036	8B	4	1 1/2 P to 2 1/2 P	0 to 1P	0 to 1P	0 to 1P		
Oldsmobile... F-85	8-3 1/2 x 2 1/2	155	AC-14	45	45	Hyd	Hyd	.016	30	.030	5B	7 1/2	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N		
..... F-85	8-4 x 3 1/2	280	AC-14	45	45	Hyd	Hyd	.016	30	.030	5B	10	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N		
..... Dynamic 88	8-4 x 3 1/2	330	AC-14	45	45	Hyd	Hyd	.016	30	.030	5B	10	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N		
..... Super 88	8-4 x 3 1/2	345	AC-14	45	45	Hyd	Hyd	.016	30	.030	5B	10	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N		
..... Starfire	8-4 x 3 1/2	330	AC-14	45	45	Hyd	Hyd	.016	30	.030	5B	10	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N	1/2 N to 1 1/2 N		
Pontiac... Tempest	4-4 x 3 1/2	110	AC-14	30	45	Hyd	Hyd	.016	75	.036	6B	6 50'	1 1/2 N to 2 1/2 N	1/2 N to 1 1/2 P	1/2 N to 1 1/2 P	1/2 N to 1 1/2 P		
..... Tempest	8-3 1/2 x 2 1/2	185	AC-14	46	46	Hyd	Hyd	.016	30	.032	5B	6 50'	1 1/2 N to 2 1/2 N	1/2 N to 1 1/2 P	1/2 N to 1 1/2 P	1/2 N to 1 1/2 P		
..... Catalina, Star Chief	8-4 x 3 1/2	215	AC-14	30	45	Hyd	Hyd	.016	30	.036	8B	4 50'	1N to 2N	1/2 N to 1 1/2 P	1/2 N to 1 1/2 P	1/2 N to 1 1/2 P		
..... Bonneville	8-4 x 3 1/2	235	AC-14	30	45	Hyd	Hyd	.016	30	.036	8B	4 50'	1N to 2N	1/2 N to 1 1/2 P	1/2 N to 1 1/2 P	1/		

Good Shopkeeping Continued from page 98

him with a picture of orderly efficient service.

Departmentalization

Carefully planned departmentalization promotes efficiency by grouping equipment necessary for specific kinds of work. Cleanliness and orderliness can be maintained by making each man in the shop or service department responsible for the work assigned to him. Over-all impression of efficiency is impressed on customer who feels his work is being done by specialists. One dealer built a new 16,800 sq. ft. showroom and service center at about \$5.00 per sq. ft. This is exclusive of service equipment such as lifts. The 70 x 240 x 14-ft. rigid frame structure was built around the Armco building system, which features interlocking Steelex panels with deep ribs that create a sculptured effect.

Because the building has no interior columns, the dealer gets maximum use of floor area for display, service, office and storage space. Interior of the showroom features colorful exposed rigid frames, metal window wall and acoustical tile suspended from the cathedral ceiling. Interior and service area is supplemented by natural lighting from plastic skylight. Wall lights have louvered ventilator panels underneath.

Exterior walls are constructed of interlocking panels, prepainted blue with an acrylic baked-on plastic finish. This roof is constructed of plain Steelex panels, pre-painted white.

For efficient heating and air-conditioning, walls are backed with insulated liner panel and the roof with 1½ inch blanket insulation. Architectural variety is achieved by incorporating aluminum window wall and masonry pylon.

Aisle Dimensions

In the service department the width of the aisle leading to 90 degree stalls should be 25 ft. It is felt that the stalls at 90 degrees will provide the most efficient layout. The one aisle should serve two rows of cars. If it is necessary to use stalls at 60 degrees, then the aisle should be 20 ft. for shops

with 45 degree stalls the aisle should be 16 ft.

Quick Service Department

In dealerships and shops it is a good idea to establish a quick service department located in an area where it is easy to drive in and out. It should be near the reception area and the customer waiting area. These quick service jobs should only take about half an hour to perform. Quick service jobs

could involve minor cooling system work, lubrication, exhaust replacement and tune-up work. Other quick service jobs can be done on the brake system, electrical system, suspension system and installation of accessories. Have all the necessary tools and equipment necessary for this work located in this quick service area.

Tools and equipment in the quick service department should include lifts, lubricating equipment, engine test equipment, quick battery

Continued on page 102

Get
A Perfect
Tire Repair
Every Time with

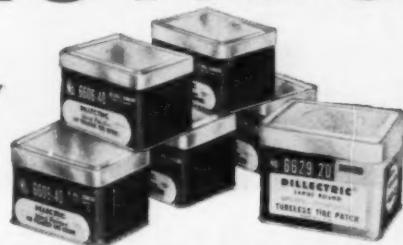
DILLECTRIC

Dillectric tire repair actually vulcanizes the injured area. It welds new rubber so thoroughly to the old that the repaired area becomes as strong as the tire was when new.

There is a Dillectric patch for every type of puncture or cut:

- 5 sizes for tube repairs.
- 2 sizes of nylon reinforced patches for tubeless tire repairs.

And you can increase your tire repair profits, too!



NEW
DILLECTRIC CATALOG
and PRICE LIST
Just off the press.
ASK YOUR SUPPLIER!

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Offices in Los Angeles, Akron and Toronto
Subsidiary of The Eaton Manufacturing Company

Good Shopkeeping Continued from page 101

charger, brake drum lathe, brake shoe grinder, brake bleeder and, of course, impact wrenches. With these tools your department will be able to handle any quick service job that rolls into the shop. One thing to always remember, keep the test equipment clean and in view of the customers, if possible. Modern equipment always makes a good impression.

The parts department counter

should be connected with the service department. It should be uncluttered, except for an occasional accessory display. The rack behind the parts counter should be well filled with parts, neatly arranged and indexed. The parts department should use standard parts bins and have special racks for fenders and other sheet metal units. Well-lighted aisles, using fluorescent bin lighting fixtures speed service and eliminate errors.



...Why Not Do It the Easy Way with K-D?

Throw away the hammer, chisel and pliers. Get a New K-D #472 Repair-a-Chain tool. Its special jaws—one set for opening links; one set for closing them—make chain repairs easy, clean, quick, because they are designed for this job alone. You keep your temper even and your pockets full doing a job that most mechanics don't even want to think about. Get one, use it several times, and it will pay for itself in customer gratitude and saved hands alone.



K-D TOOLS

Make hard jobs easy

Body Shop

It is advisable to keep the body shop separate from the service department. The paint shop should be located in the body shop, but in a separate partitioned area. Use of sound proofing materials should be used to cut down on noise. Cinder block should be used in the body shop construction because of its sound absorbing qualities. Also essential to the body shop is good lighting, ventilation and heating.

A dust proof paint shop should be strived for. This department should be thoroughly ventilated to minimize fire and health hazards. Incoming air should be filtered and air should be circulated to remove vapors. In the installation of a paint booth, local fire codes should be carefully studied and followed. The booth must be vaporproof and have its own separate exhaust system. The electric switches, lights and motors must also be vapor proof. The paint booth should be minimum size of 15 x 24 ft. Lights in the paint booth should be of natural lighting variety.

Lighting

Good lighting and color planning are "must" for the dealership and shop today. Carefully planned use of color and light improves the workers efficiency. It also reduces accidents. Direct light system should provide for a minimum illumination of 100 ft. candles at 30 inches above the floor level. Hot cathode type light and fluorescent lighting are used in many modern shops and dealerships. There should be special provisions for lighting around the hoists, mono-rail and other areas in which the lights may be hit by cars or assemblies being lifted from the floor.

Heating System

Heating the office and showroom can be accomplished by oil or gas-fired boiler or furnaces. If a hot air system is employed, air conditioning can be incorporated through the same duct work. Heating of the service department can be by hot water radiant heating in the floor. Forced convection steam or hot water heater units suspended from the ceiling are also

very good. The heat blast should be spread uniformly throughout the service department with some facing the large doors.

Ventilation of the service department should be by forced convection because of carbon monoxide dangers. The fan and motor capacity should be sufficient to provide an adequate air change. Arrangement should be made to bring air into the room to replace the air drawn out by the exhaust ventilating fan.

Imported Car Dealership

We have discussed the floor plans and layouts of shops and dealerships that handle American-made cars and trucks. How do the imported car dealerships compare to the domestic car dealership building? Motor Age has surveyed a typical foreign car dealership to round out its picture of dealerships and shop layouts.

Showroom

Showroom of a Volkswagen dealer should be a minimum of 1,200 sq. ft. It should be capable of displaying three vehicles. Other departments incorporated in this VW dealership are offices, storage, cashier, rest rooms, customer area and heating and air conditioning.

The workshop is recommended to be a minimum of 60 ft. in width. This will allow for 10 ft. x 20 ft. stalls with a 20 ft. center isle. Workshop ceiling height should be a minimum of 14 ft. The unit repair area is with the workshop area. In this area, engines, transmissions, differentials, etc. are repaired. A minimum size would be 15 x 20 ft. and should be located where good natural light is available. The work stalls recommended are one work stall for each 150 Volkswagens in the dealer's area. Over seventy per cent of work stalls should be provided with lifts.

The customer waiting room is designed to keep service customers out of the service area. The service manager's office is situated between the work shop and this area.

The basic requirement for a Volkswagen dealership with respect to the parts department is 150 sq. ft. on the first floor, preferably 200 sq. ft. for each work stall in the service department. A

minimum of 1200 sq. ft. would be required on the first floor for even the smallest dealership.

Service Stations

Good Shopkeeping is a "must" with every service station. A clean looking establishment is an inviting establishment. Cleanliness will increase business. Many motorists shop around and look for a service station that is clean and neat. They would reason that in addition to being clean, the tools and equipment and service also would be of

the best, and new, instead of dusty and grimy.

Every service station should institute Good Shopkeeping practices. These "clean up campaigns" will always give business a boost. An orderly and clean establishment helps a motorist to feel at ease. When the customer is relaxed he is more inclined to listen to sales talk and service repair suggestions.

Service stations should keep their places neat and presentable by using a workable day-by-day,

Continued on page 108



QUICK REMEDY FOR TUNE-UP-PHOBIA Complete PACCO tune-up kits

Every Pacco Carburetor Tune-Up Kit contains step-by-step instructions for the carburetor your customer is working on . . . plus service tips and changes, and a clear diagram of every part. He tunes carburetors expertly—and makes good money doing it.

Which means you make money, too—selling Pacco. Moral: Prescribe Pacco complete tune-up Kits.



PRECISION AUTOMOTIVE COMPONENTS COMPANY
Ballwin, Missouri

Detroit Report...

New Spring Fashions

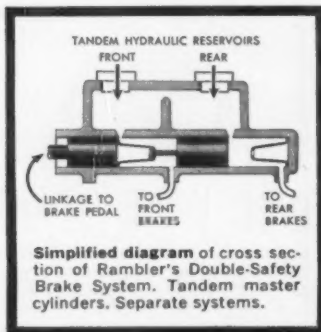
When Chevrolet announced its single-leaf spring for the Chevy II, Ed Cole, Chevrolet general manager, predicted that other makers would soon follow.

Oldsmobile and Buick are now tooling up for new 1963 frames that will employ the Hotchkiss drive. This means that the rear coil springs will be dropped, and it's a good bet that the substitute will be single-leaf springs. Fruehauf Trailer Co. is developing such a spring for trailers.

However, Ford Division, pioneer in single-leaf-spring development, has just about killed this program. The reason—at least the one fed out to the press—is that proto-type springs become permanently deformed by severe loading.

Double Brake System Means Double Safety

Biggest advance since hydraulic brakes is Rambler's new Double-Safety Brake System—tandem master cylinders, one for front brakes, one for rear. If one system is damaged, the other still works. Other Rambler advances are: New



Road Command Suspension on Classic and Ambassador allows remarkable new precision control. Tires and wheels precision balanced at factory. Oil filters standard on all models. Many parts lubricated for life—33,000 mile chassis lubrication on most. Who gets the first ride?

Burning Question

Look for at least one low-cost device for combating crank-case and tailpipe smog to be submitted for test in California—and then to the

entire auto industry—in the next few months. American Machine & Foundry, teamed with the Chromalloy Corp., is completing a system that burns up carbon monoxide and hydrocarbons in the exhaust circuit.

The key to it is chrome-plating an afterburner to withstand the high temperatures involved. A spark plug starts the combustion, which then is self-sustaining. It is said to be good for 50,000 miles—superior to the short-lived catalysts such as vanadium oxide and platinum.

Easy to Ride Honda 50

The Honda 50 is easier and safer to ride than a bike... has an automatic clutch and 3 speed transmission that shifts with a touch of a foot. For hunters and fishermen, nothing on the market equals the performance of a Honda Trail 50—takes you over desert and mountain country where even a jeep cannot go. Let's Go!!!

Latest Word On Cardinal

The rumor is that Ford Motor Company has thrown out the front-wheel drive concept for Cardinal and is converting to a rear-engined design. This comes from a high official of Volkswagen of America. He is quite certain, incidentally, that the Cardinal will eventually be introduced and that General Motors will have to counter with a similar-sized car.

AC Means ACTION

AC gives you spark plugs with self-cleaning action, whether you drive on the highway or in the city. It's AC's Hot Tip that makes the difference. This extremely thin insulator tip heats up fast to burn off fouling deposits as they form. In addition, the recessed structure gives extra space for further cleaning by swirling combustion gasses. For those cars that require them, AC provides extended tip design with Extended Shell that gives added protection against "drowning" and insulator tip breakage. AC means self cleaning ACTION... and they're perfect for every make of car now on the road.

More Power Packages Now Planned

Convinced that buyers want more power, several auto makers will offer special horsepower packages in 1963.

In addition to Olds' turbocharged aluminum V-8 engine, Chrysler may offer a super-performance car next year, as well as a high-powered special for police use.

Oldsmobile's turbocharged engine, due late next month, was hurriedly announced because Olds wanted to be first with the news. Actually, Chevrolet is probably farthest along with its turbocharger.

Gus Wilson's

A regular monthly feature of Popular Science

It was a frosty Christmas Eve and Gus was all set to enjoy a well-earned holiday. But what could he do when a weird two-car caravan rolled up to the Model Garage—a big car pushing a little one—and both in need of help? Especially at this time of year and especially when the big car contained three bearded and turbaned U.N. delegates, and the little one a serviceman's wife

POPULAR SCIENCE READERS

Suspension Program Suspended

Inside sources report that Ford has stopped work on air-oil suspensions. But interest in this suspension continues among both American and European engineers. Almost every European auto maker has prototypes on test. In this country, American Motors is most active; a Rambler is now scooting 'round Detroit with an air-oil setup.

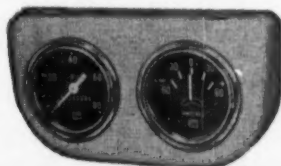
Fore-Warning

Stewart-Warner's "Twin-Gauge" panel tells car owners at a glance that their car is low on oil pressure or has an inadequate generator charging rate—the panel helps avoid

from Popular Science Monthly

355 Lexington Avenue, New York 17, New York

trouble and does a more thorough job than warning lights. The



"Twin-Gauge" panels are available in black or white or "Twin Blue" face dials. This little security costs

Model Garage



with a crying baby?

With a delicate point of protocol at stake (which car to fix first?)—not to mention the language barrier and the wailing infant—Gus has to come up with a minor miracle to straighten everything out in time to say Merry Christmas and to all a goodnight. See "Gus Plays a Diplomatic Role"—in Dec. PS. ARE YOUR BEST CUSTOMERS

little but offers much.

Silent Stoppers

Cadillac, whose engineers say one of the most important products they sell is quietness, will announce next year practically noiseless brakes—something never before achieved by any car maker, either here or abroad.

These antisqueal brakes are expected to be particularly useful for eliminating those annoying low-pitched noises particularly common in the rear wheels.

New Rag-Tops

More convertibles are on the way. The Convair convertible, with a manually raised top, will be ready next March. Ford is about ready

with a Comet convertible but some officials are reluctant to okay it.

Ford Motor Company Switches To Autolite

Autolite Spark Plugs are now specified for original equipment installation on every vehicle that rolls off Ford Motor Company assembly lines. And they are strongly recommended by Ford Motor Company engineers for replacement use in all units now in service.

In each Autolite Power Tip spark plug the electrode or firing tip is longer than usual. This tip is made of a special heat resistant alloy.

In driving, lead and other harmful, fouling deposits start to accumulate on the firing tip. If allowed to remain, they will eventually short out and kill the plug.

But the firing tip on an Autolite Power Tip spark plug extends deeper into the engine. Deposits are immersed in the searing heat of the exploding gasoline.

With a Power Tip, each time the engine fires, the deposits are actually burned away. Spark plugs stay clean, so that mileage and power stay at their peak.

Holley Adds New Pep

Give that car new pep, economy and performance with a brand new Holley PEP Carburetor. One Holley single base, downdraft model for all 1960-1962 six cylinder Chrysler built cars, including Dodge, Lancer, Plymouth and Valiant. Holley carburetors are brand new—not rebuilt. They are made to the same original equipment quality specifications as carburetors Holley is supplying for 1962 Chrysler built sixes and are factory inspected and sealed.

The Holley Carburetor Company has been a supplier of original carburetor and ignition equipment for over 55 years. Holley has genuine parts for American Motors, Chrysler and Ford cars.

The Holley people carry a complete stock of Holley carburetor and ignition repair kits and parts, plus brand-new Holley PEP Carburetors.

Leading Advertisers Appearing In The December Issue of POPULAR SCIENCE

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Gumout

Oldsmobile Division
Olds 88

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Tempest Le Mans

Quaker State Oil Refining
Motor Oil

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Holley Carburetor Co.
Carburetors

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AC Spark Plug
ACon-O-Mizer

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AC Spark Plug
Spark Plugs

Stewart-Warner Corp.
Twin-Gauge Panels

Kendall Refining Co.
Motor Oil

AMERICA'S FOREMOST AUTOMOTIVE MARKET



ON SALE —
AT YOUR NEWSSTAND

NEW LITERATURE

Tune-Up Handbook

Offers step-by-step tune-up procedures of all engines

Sun Electric Corporation: Announced is the availability of a newly-published "Tune-up Handbook." This handbook contains sixty pages of facts, figures and illustrations designed to guide the reader through all engine

tune-up operations using modern testing equipment. Based on technical research and study under actual shop operations, it gives step-by-step procedures of all engine and electrical Tune-Up tests. It is available to the automotive service industry, including auto mechanics, tune-up specialists, service writers, managers, and automotive trade

school instructors. Write: *Sun Electric Corporation, Dept. S.D., Chicago 31, Illinois.*

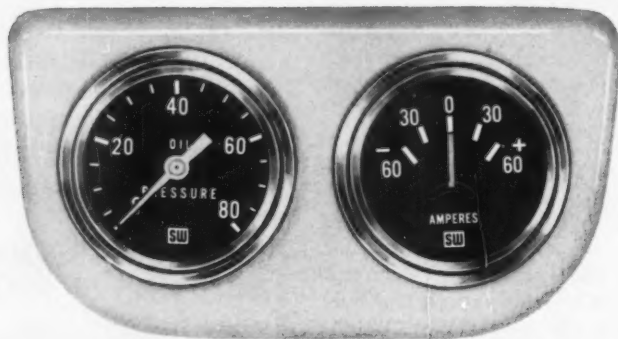
Muffler Catalog

Contains automotive exhaust system data

Merit Muffler Division, 619 Smith St., Toledo 1, Ohio: Automotive exhaust system data is now available, including listings of all 1961 car makes and models. It is contained in the Division's new catalog. Scale drawings of exhaust systems for all 1961 car makes and models have been added to those of past years. The 152-page catalog and insert contain all U.S. and foreign passenger car and truck applications as well as the scale drawings of exhaust systems. The indexed insert contains the numerical listings of more than 1,700 Merit muffler and pipe numbers, including popularity rating, weight, application data, car factory part numbers and complete specification data. Write: *Merit Muffler Division, 619 Smith St., Toledo 1, Ohio.*

*Thousands of new car owners
are prospects for...*

STEWART-WARNER "TWIN-GAUGE" PANELS



These car owners are not content with just warning lights. They want to know conditions under the hood at all times. They want to be alerted before trouble hits—not after.

Stewart-Warner Twin-Gauge Panel—with ammeter and oil pressure gauge—will appeal to every alert driver who wants to avoid costly trouble.

Attractively styled, these easy-to-install "Twin-Gauge" Panels are available in Deluxe "Colonial Grain" Royale, Chrome Plated or Stand-

ard Black Enamel finishes—with instrument face dials in either "Twin-Blue" or Black & White.

A fast moving, highly profitable accessory that needs only your recommendation. . . . And you can give it with confidence knowing the dependable quality of Stewart-Warner.

Contact Your Wholesale
Supplier Today



Dept. CC121, 1846 Diversey Pkwy., Chicago 14, Ill.

Ignition Handbook

Contains a comprehensive listing of magneto ignition

Wells Manufacturing Corporation: The new maximum capacity Capac Magneto Parts Catalog is now available to jobbers, dealers and servicemen. It is a magneto ignition handbook in itself. It contains a comprehensive listing of magneto ignition parts, all end use applications are fully indexed and cross-referenced to original stock numbers of basic engine manufacturers. The 5-section catalog contains illustrations and descriptions of Capac's Vu*ak Tune-Up Kits and individual parts for all makes of outboard, marine, industrial, and farm implement magnetos; a special listing of engine model parts guide, giving the correct Capac Tune-Up Kit for each. Write: *Wells Manufacturing Corp., Fond du Lac, Wisconsin.*

Checker Car Continued from page 43

Superba, and the Marathon. Each offering 4 door, 6 and 8 passenger sedans, and 4 door, 6 passenger station wagons. Wheelbases are a standard 120 inches and all measure 199.5 inches overall. The engine is a 226 cu. in. 6 cylinder, either "L" head or O.H.V. The standard transmission is a 3-speed manual, with both overdrive and automatic as optional equipment.

Calendar of Coming Events

Dec. 7-14—Automotive Electric Assn. 44th Annual Meeting and Manufacturers-Distributors. Conference, Edgewater Beach Hotel, Chicago, Ill.

Dec. 9-11—8th Annual Auto Trim Show-Convention, Hotel Ambassador, Los Angeles, Calif.

Jan. 7-9, 1962—Fort Worth Auto Show, Will Rogers Exhibit Bldg., Fort Worth, Texas

Jan. 14-17—National Independent Automobile Dealers Assn., Stardust Hotel, Las Vegas, Nev.

Jan. 18-20, 1962—Independent Garage Owners of America Mid-year Board Meeting, Hotel Tulsa, Tulsa, Oklahoma

Jan. 26-28—Birmingham Auto Show, Municipal Auditorium, Birmingham, Ala.

Feb. 3-7, 1962—National Automobile Dealers' Assn. Convention & Exhibition, Convention Hall, Atlantic City, N.J.

Feb. 21-25—12th Annual National Autorama, Connecticut State Armory, Hartford, Conn.

Feb. 28-Mar. 3—International Automotive Service Industries Show, Navy Pier, Chicago, Ill.

Mar. 22-25—Pacific Automotive Show, Memorial Coliseum, Portland, Ore.

Mar. 28-31—The National Automotive Radiator Service Assn. Convention and Trade Show, Statler-Hilton Hotel, Los Angeles, Calif.

Apr. 11-13—Canadian Automotive Service Show, Automotive Building, Canadian National Exhibition grounds, Toronto, Canada.

June 20-23—Independent Garage Owners of America Seventh Annual Convention, Battery Park Hotel, Asheville, N.C.

Tires are 6.70 x 15 4-ply, with 7.10 x 15 4-ply standard on the station wagons.

The Checker's claim of interior roominess is backed up by some pretty impressive dimensions. Front head room is 34.75 inches, with front leg room measuring 42 inches. In the rear, the head room is 34.5 inches and the leg room is 50.5 inches. Station wagon cargo

space measures 93 cu. ft. The trunk of the sedan offers 20 cu. ft. of carrying capacity with the spare tire in place.

The high, wide doors, and the completely flat floor, which permits the use of "jump" seats, make possible the accommodation of eight passengers with comfort.

With durability that extends from its heavy-duty frame to its long-wearing, washable upholstery, Checker is producing an automobile that may well be here to stay.



LEE puts an oil refinery in your customers' cars!

Just like an oil refinery, a full-flow LEE Oil Filter not only removes sludge and grit, it also *neutralizes acids* which often form as a by-product of combustion. This dual-action purifying process—made possible by LEE's *Resinweld®* construction and unique antacid *Feridium®* anode—assures better engine performance, greater customer satisfaction.



Lee creates new concepts in filter design and efficiency

Every dual-action LEE filter gives you an *extra profit margin* as well as an extra sales feature: LEE Oil Filters remove dirt and neutralize acids; LEE Gas-O-Line Fuel Filters remove both sludge and water; LEE flame-proof Air Filters prevent under-hood fires caused by carburetor backfire. See your jobber today for the details.

LEE FILTERS pipe profits into your pocket

© 1960 • LEE FILTER CORP., Edison, N. J. / In Canada: 3 Parnell Ave., Scarborough, Ontario

Good Shopkeeping Continued from page 103

month-after-month Good Shopkeeping plan. This makes each task an easy routine one instead of a mountain of jobs two or three times a year.

Clean Service Department

Clean the service department thoroughly. If it is clean and orderly it creates confidence in the work turned out. This in turn inspires the motorist to spend more

money. The floor must be clean, uncluttered and safe to walk upon. Establish the practice of cleaning up after each job is finished. The floor should be mopped or hosed down. All tools should be cleaned and replaced in their allotted spot after being used. All equipment and lifts must be carefully wiped clean.

All employees should also be encouraged to use slack time to good

advantage by refilling lube equipment, replacing stock, emptying drain cans and removing empty containers. The hose of lube and air equipment should always be wiped clean at frequent intervals. A damp cloth can be used to wipe all enamel equipment, window ledges, stock and signs.

Keep Equipment Clean

Porcelain coated equipment should be waxed weekly to make the daily cleaning job easier. Weak or burned out bulbs should always be replaced. Reflectors and bulbs should be dusted. Ceilings and walls should be scrubbed down frequently. Also windows should be washed often. Remove dirt and trash immediately from tool benches and floor drains. Keep corners clean and uncluttered.

The office and the salesroom should be kept "extra" clean and attractive. The atmosphere should be inviting to the customer as he walks in. Do not crowd this area with too many displays. The windows should be kept sparkling clean, inside and out. This includes the background and the platform. Stock on the shelves, display bins and tables should be dusted every day. The salesroom and office are the showrooms of the establishment and should be kept in A-1 condition.

Attractive Exteriors

Most important in Good Shopkeeping is keeping the outside of the shop area attractive and inviting. Be sure that the signs are well located. Replace any out-of-season signs and ones that are tattered or dirty. Wipe the porcelain signs and lift reflectors off to keep them at their best.

Requests For Floor Plans

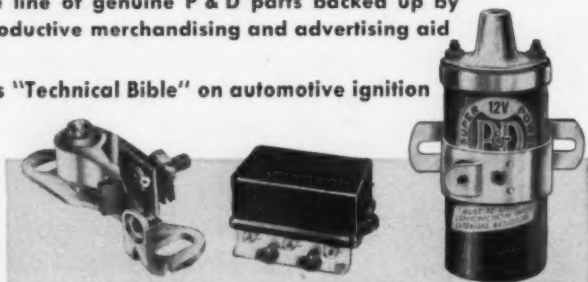
Motor Age during the past two years has been deluged with many requests for floor plans and tool arrangements. These requests from dealerships, shops and service stations indicate a need in the industry for continued help in planning more efficient and practical buildings. This article on Good Shopkeeping is one means in providing our readers with helpful information and tips on improving, expanding or rebuilding dealerships, shops and garages.

Why Wait? Start Now To

P&D-IZE

with the seven BIG features developed by your wholesaler and P & D to help you get, and keep, a profitable ignition tune-up business! The P & D-ize program, unique in the industry because it covers all the points you need—

- ① One stop tune-up service
- ② Finest equipment, plus schools, clinics, etc.
- ③ 100% P & D parts warranty
- ④ Tune-up manuals
- ⑤ All year service from your wholesaler and P & D field men
- ⑥ Complete line of genuine P & D parts backed up by sound productive merchandising and advertising aid
- ⑦ P & D's "Technical Bible" on automotive ignition



There's more profit in ignition tune-ups. There's most profit in the P & D-ize program. Ask your wholesaler, or write us.

P&D MANUFACTURING CO., INC.
STARTING - LIGHTING - IGNITION

19-02 STEINWAY ST., LONG ISLAND CITY 5, N. Y.

Export Sales: Borg Warner International, 36 So. Wabash Ave., Chicago 3, Ill.

Increased Dealer Potential

Continued from page 42

Q.—In recent years the retail automobile business has produced one of the lowest net profits (either as a per cent of sales or return on investment) of any business. Do you think that the future will show any improvement?

A.—Yes, It's a simple matter of survival. Dealers are fed up with swapping dollars. Thoughtful car buyers are becoming increasingly more interested in a fair price and good service than only in the "best deal."

Q.—Diversification has been a Studebaker keynote in recent months. How is the program going?

A.—We refer to ourselves as a growth-minded management team. These divisions are indicative of our progress: Studebaker cars and trucks, of course; then, U.S. distribution of Mercedes-Benz cars. In addition, there are the Onan division, makers of Diesel, gasoline and propane-powered electric generators; CTL division, structural plastics and high temperature shieldings in the missile field; Gravely Tractor division, makers of utility tractors for lawn, garden, farm and industrial applications; Clarke Floor Machine division, floor maintenance equipment, sanders, sweepers, scrubbing and polishing machines; Chemical Compounds division, manufacturers of specialized additives; Gering Plastics div., volume producers of thermoplastic molding compounds and polyethylene sheeting.

Q.—Do you believe that the NADA Task Force will prove effective?

A.—We have met with the Task Force as have other manufacturers and have discussed several matters with them.

we are considering several of their proposals. However, a great many problems which dealers face can only be solved at the retail level. We are doing all we can to help them.

Motor Age's Service Tip



Winter roads can cause havoc to car's alignment. Offer to check car's front wheel alignment and sell wheel balancing jobs at your station.



SAV-T-JACK

LIFTS ALL CARS & FLATBED TRUCKS . . . UP TO 5000 lbs.

SAV-T-HOIST

"THE ATLAS OF TRUCK LIFTS" . . . UP TO 7 TON CAPACITY



GET THE BIG LIFT!



SAV-T-STANDS

"ADJUSTABLE SPRING-LOADED SCISSOR LOCK"

SEE YOUR JOBBER

Write for complete information:
SAV-T-ENGINEERING CO.
316 E. Beach Ave. Inglewood, Calif.

UPCOMING

What to look for in future issues of MOTOR AGE

JANUARY
1962

READERSHIP FORECASTS *Motor Age seeks the opinion of industry leaders on problems that affect the automotive retailer.*

PREVIEW OF THE NATIONAL AUTOMOBILE DEALERS ASSOCIATION *Convention Hall, Atlantic City, N.J. February 3-7. Accent on Car Dealer Management Problems.*

LATEST INFORMATION ON MODERN BRAKE SERVICE *A six-page detailed how-to-do-it study.*

MOTOR AGE TRAINING PROGRAM *Basic Horsepower Calculations, including indicated horsepower, brake horsepower and a discussion of torque curves.*

FEBRUARY
1962

PREVIEW INTERNATIONAL AUTOMOTIVE SERVICE INDUSTRIES SHOW *The Greatest Automotive Show on Earth—The International Automotive Service Industries Show, Navy Pier, Chicago, February 28-March 3.*

New Ideas—New Products—New Sales Promotion

Multi-page How-to-do-it Information on TUNE-UP AND ELECTRICAL SYSTEMS

MOTOR AGE TRAINING PROGRAM *Basic Ignition Circuits as they apply to the various engines. This will include fuel induction, carburetion and supercharging.*

MARCH
1962

THE SWEET SCIENCE OF SELLING SOMEBODY *Pre-season selling for Spring and early Summer.*

CLUTCHES AND TRANSMISSIONS *Technical information on lots that you should know about these important mechanisms.*

MOTOR AGE TRAINING PROGRAM *Lubrication systems including oil pumps, oil filters and oil flow diagrams.*

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Address Mail to Motor Age, Chestnut & 56th Sts., Phila. 39, Pa. Phone: SHERwood 8-2000

REGIONAL MANAGERS

Atlanta 9, Georgia

John W. Sangston
1776 Peachtree St., N.W.
Phone 875-1255 (Area Code 404)

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EDITORIAL OFFICE
National Press Bldg.,
Washington 4, D.C.

Executive Offices: Chestnut & 56th Sts., Philadelphia 39, Pa., U.S.A.

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Multi-Fuel Diesel Continued from page 66

combat gasoline, becomes, then, more obvious.

The multi-fuel engine is not a completely new engine, but rather a conversion of the standard type Diesel. Only five basic changes are required to convert a Series 53 diesel, for example, to a multi-fuel operation. These are (1) higher compression pistons, (2) changing injector from standard to needle valve injector, (3) high output fuel

pump, (4) auxiliary fuel booster pump and (5) minor fuel line plumbing changes. According to Detroit Diesel's engineers and sales people, this engine has no immediate commercial possibilities. They indicated, however, that it may come later, but first it has to be thoroughly tested by the military.

New pistons are of 23:1 compression ratio as compared with 17.5:1 for standard production piston.

Training Schools . . .

Continued from page 74

classrooms in each of the 30 General Motors Training Centers, and classes are conducted continuously throughout the year. All UMS customers are eligible to sponsor students for these schools and there is no tuition.

Classes are scheduled by the individual UMS zones in which the training centers are located. Subjects cover a wide range of automotive service.

MILLIONS
look for this SIGN

IT'S THE BEST
NEW BUSINESS
BUILDER YOU
CAN OWN!

Advised in

The **POST**

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Dept. M-10, Rock Island, Ill.



A MUST FOR MECHANICS



- "The How and Why of 3 Phase Alternators," by Arthur W. Bailey.
- Takes the mystery out of Leece-Neville.
- Autolite, Chrysler, and Delco-Remy alternators and transistor regulators.
- Written in concise non-technical language.
- Over 50 illustrations and diagrams.
- Pages varnished to prevent soiling.

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LIQUID WRENCH
Loosens
Rusted Bolts
nuts, screws, "frozen" ports!

The super-penetrating rust solvent that quickly loosens rust and corrosion.

YOUR JOBBER HAS IT!
RADIATOR SPECIALTY CO.
CHARLOTTE, N. C.

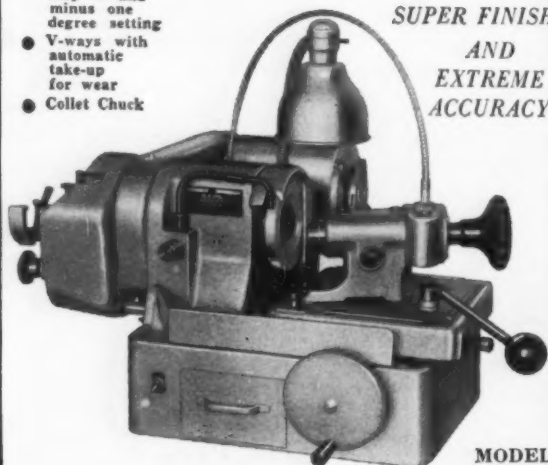
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LIFETIME

- Zero to 90° positive stop — and minus one degree setting
- V-ways with automatic take-up for wear
- Collet Chuck

Valve Refacer

**SUPER FINISH
AND
EXTREME
ACCURACY**



MODEL
K403CM

The only valve refacer that offers all automatic pre-load compensation for wear. No mechanical adjustments necessary, or expensive service or parts replacement. Machines retain original fine accuracy throughout years and years of service.

K. O. Lee Company, Aberdeen, S. D.

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Tool Boxes

★ Write for Complete Catalog

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Pioneer in the Manufacture of Quality
TOOL BOXES, TOOL CHESTS and ROLLER CABINETS

SIoux ABRASIVE DISCS

From the modern, air conditioned plant of Albertson & Company's Abrasive Division (pictured below) are rolling the newest type abrasive discs. They not only cut faster with less effort, they stay "Cool as a Cucumber."

Next time you're ordering say **SIoux** and see.

ALBERTSON & COMPANY, INC.
SIoux CITY, IOWA, U. S. A.



"Gates Belts help us bank more money every month."

says Frank Dardano, North Denver Auto Service,
3737 Kalamath, Denver, Colorado

"We have featured Gates Belts ever since we began this business nine years ago, and are more than satisfied with the extra profits we are able to put in our bank account every month.

"Our men check every belt on a car every chance they get...not only fan belts but those on air conditioners and power steering...and customers are quick to appreciate this extra service. Replacing a worn belt is only a ten-minute job, and the profit on the sale sure makes it time well spent.

"Another of our fast-moving and profitable items is Gates Vulco-Flex Radiator Hose...a real pleasure to install."

"Go" Gates for Profit... Call your Gates Jobber Today!

Your Gates Supplier will have a factory-trained Gates Representative install attractive belt and hose displays, clean up your belt and hose stocks, and supply you with a complete set of station-tested Gates Sales Aids. He'll also help you get your present stock in shape for top profits—and you won't lose a penny!

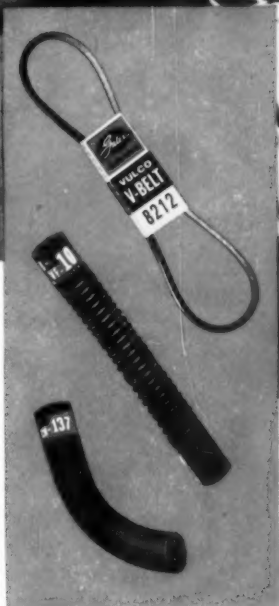
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DENVER, COLORADO



World's Largest Maker of V-Belts

Gates Vulco V-Belts and Hose

TPA 582



AP Mufflers Give You 22.4% More Steel by Weight

... for longer life

Plenty of "heft" is what you and your customers need in a muffler, because weight, when it's the result of thicker steel and more tubes, is quick, sure proof of ability to resist corrosion and to last longer. And with AP, your customers get the extra weight of more and heavier steel—at no extra cost.

This is something you can easily prove to your own satisfaction, and theirs. You don't even need scales to prove it. For example, just pick up one of the 10 fastest-selling AP mufflers and then pick up the corresponding numbers in any other brand. You can feel that AP is heavier. On the average, it is 22.4% heavier than competition. In fact, one popular muffler for Chevrolets is 49.1% heavier!

Extra steel is but one of many factors that make AP the quality line. Because they are needed to make a quality muffler, AP gives you coated steel, "Dri-Flow" design, asbestos liners, more and heavier inner construction, thicker shells, thicker outer heads, air-liner shells, double-locked crimped seams, and Non-Rust pipes. They all add up to make AP the longer-lasting muffler. Why not join 100,000 AP dealers in giving your customers the best—at no extra cost. Call your AP wholesaler today. THE AP PARTS CORPORATION, 3-Y AP BUILDING, TOLEDO 1, OHIO.

SELL 15-MINUTE INSTALLATION...

**THE PROFIT PART
OF YOUR BUSINESS**



AP

**AP MUFFLERS ARE SOLD BY MORE
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